

Dying in the Intensive Care Unit

Francisco Del Olmo, MD; Yomayra Otero, MD; Juan Flores, MD;
Jesse Aleman, MD; William Rodríguez-Cintrón, MD, MACP

Objective: To document (using available data) the profile of the patients seen by the hospital's palliative service (PS) and who died in the medicine intensive care unit (ICU) of the Veterans Affairs Caribbean Healthcare System.

Methods: A record review of subjects who died in the ICU from January 1, 2012, to December 31, 2014. Demographic data, underlying comorbidities, the cause of death, the length of stay, evaluation made by the PS, and the withdrawal of life support (when such occurred) were recorded for each patient.

Results: A total of 200 patients met the criteria, mostly males. All the women and 50% of the men were over 79 years old. Seventy-three percent of the patients were on mechanical ventilation when admitted, most having come from the emergency department. Fewer than 15% had advance directives. Forty-nine percent had been admitted to a hospital facility at least once during the year prior to their current admission. Most of the patients (60.5%) died within the first week, while 13% died within the first 24 hours. PS was requested for 56% of those who survived more than 24 hours, of which only 10% underwent the withdrawal-of-care protocol.

Conclusion: A small percentage of the patients who died in the ICU had advance directives at the time of admission, this though all were of advanced age, had recently been discharged after a prior hospital stay, suffered from 1 or more chronic illnesses, or had a history of mental or physical disease. Our findings underscore the need for the early referral of patients of the type previously mentioned to a PS. [*PR Health Sci J* 2019;38:3-7]

Key words: Palliative care, Withdrawal of treatment, Intensive care unit, Beneficence, End-of-life care

In 1543, the idea of the intensive care unit (ICU) was conceptualized when Vesalius documented animal ventilation using a bellows in a rhythmic fashion in his classic work "De human corporis fabrica". With the passing of time, the practices of prioritizing critically ill patients and providing continuous care were developed.

The literature recounts the story of Florence Nightingale, a British nurse who, during the Crimean War (1853–1856), took the initiative to develop a designated area to attend and closely monitor the sickest and most gravely injured patients. By 1929 a formal, special neurosurgical unit was created at the Johns Hopkins Hospital in Baltimore (1). By the 1950s, ICUs had been created with the intention of providing specialized care, mostly because of the pandemic associated with poliomyelitis and emerging new technologies, such as the iron lung. Since then, sophisticated units have been developed. Nowadays, the evolution of critical care units requires a multidisciplinary approach, with the involvement of multiple specialties.

These advances have resulted in the further segregation of care into surgical and non-surgical units. ICUs were created around 1950 with the objective of providing specialized care and novel technologies to patients with critical diseases in order to treat and cure them. As a result, more deaths began to occur in the

hospital than at home, switching the death process from taking place in a warm, home- and family-centered setting to one that is cold, invisible, and family-limited: the ICU (2). In the modern era, the traditional goals of the ICU focus on reducing morbidity and mortality in the critically ill. However, despite technological advances, the mortality rates remain high. A retrospective study by Angus and colleagues estimated the mortality in the ICU occurs in 1 of every 5 of the Americans (3–5). In addition, the total number of deaths in ICUs each year approximates the annual total number of deaths from cancer each year (6). Several studies have evaluated the attitude toward death in the United States, showing that 9 of 10 persons would prefer to die at home but that 20% will die after receiving the most technologically advanced care available (7).

Many patients with terminal diseases and low probabilities of survival are being repetitively admitted to the ICU wards with the purpose of receiving aggressive interventions that are

VA Caribbean Healthcare System, San Juan, Puerto Rico

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Address correspondence to: William Rodríguez-Cintrón, MD, MACP, VA Caribbean Healthcare System, 10 Casia St., San Juan, PR 00921-3201. Email: william@prmail.net

intended to prolong their lives and that, in the end, are futile, given the prognosis of the underlying disease. In addition, the prolonged ICU stays of patients pending for evaluation by an institution's palliative service (PS) elevate the total cost of hospitalization compared with those costs incurred by patients admitted to wards (7). Although important procedural skills for the critical-care medicine specialist, such as advanced cardiac life support, mechanical ventilation, and central-line placement, among others, are required, the essence of the unit is based on a multidisciplinary work approach. The ICU uses a multidisciplinary approach, with the involvement of different services including a nutritionist, pharmacist, and social worker, as well as family members' involvement. Quality of life and dying with dignity should be the twin aims in care when a patient with a terminal disease or very bad prognosis is admitted to the hospital and the ICU ward. A proper alignment of resources should take place to avoid taking end-of-life decisions at the last moment in patients with terminal diseases or critical illnesses and also to avoid providing non-beneficial life-sustaining treatments when such patients are in the ICU. The withdrawal of life support is a multidisciplinary protocol. In order to comply, several meetings need to be conducted; these meetings are held consecutively and not concurrently to provide sufficient time for orientation to the family members. The initial meeting involves nurses, the intensive care physician, the palliative care physician, the social worker, and family members and is dedicated to going over all the different aspects and points of view and what to expect, as well as to answering any and all possible questions. Further meetings are devoted to making the necessary arrangements and deciding on a date and time. A final meeting is held to confirm the decision. This process guarantees that the patient's wishes regarding his or her end-of-life care are honored. Ensuring death with dignity in the ICU should be the priority when a life-threatening illness demands interventions that are rejected by the patient (or by that patient's relatives) and when the withdrawal of life support is being evaluated.

Data related to the severity of disease and final decisions of end-of-life care among a Puerto Rican population have not been described in the past. In order to describe the profile of the patients seen by the hospital's PS and who died in the ICU, retrospective data were evaluated.

Patients and Methods

A retrospective record review was conducted at the Veterans Affairs Caribbean Healthcare System, San Juan, Puerto Rico (PR). Information from patients 21 years old and above who died in the ICU ward from January 1, 2012, to December 31, 2014, was gathered. The data included age, gender, the presence or lack of advance directives on admission, religious beliefs, years of education, economic status, social-support availability, the presence or lack of a physical handicap, cognition and the presence or lack of a mental disorder, the number of hospital admissions in the last year (including the ICU), the

number of admissions to the ICU in the last year, the number of days from the last to the current admission to the hospital, whether a given patient had been admitted to the ICU from the emergency department (ED) or hospital ward, whether mechanical ventilation was required on admission to the ICU (or within 24 hours of same), whether vasopressor drugs were administered on admission to the ICU (or within 24 hours of same), APACHE II score on admission, chronic disease history (such as a diabetes mellitus and hypertension, among others), and the use or not of chronic mechanical ventilation. In addition, other information, such as the length of stay in days before evaluation by the palliative service, the number of meetings with the palliative service while admitted to the ICU, the total length of stay (in days) in the ICU, the withdrawal of life support while in the ICU (if applicable), and the time elapsed between the withdrawal of life support and death (if applicable), as well, was gathered. Those patients who were declared or suspected to be brain dead within the first 48 hours of admission or who had incomplete information were excluded. The study was submitted to and approved by the Veterans Affairs Caribbean Healthcare System Institutional Review Board.

Results

A total of 273 records were available, and 73 were excluded: 72 of them lacked information and 1 was of a patient who had been diagnosed with brain death. In the end, 200 records were included. Annual and monthly distributions of deaths are shown in Table 1. The latter has a mean of 7.5 deaths, with a progressively decreasing trend, going from 105 to 81 deaths during the studied time period. Data from 195 male patients and 5 female patients were collected. All the female and fewer than half of the male patients were aged above 79 years. Eighty of the patients were identified as being physically and/or mentally handicapped prior the time of their admission. Ninety percent of the patients ($n = 196$) had at least 2 chronic diseases. The compiled information indicates that the majority (94.5%) of the patients had some kind of spiritual belief, which was recorded in the section of each chart given over to religious

Table 1. Distribution of deaths in the intensive care unit: 2012 – 2014

	2012	2013	2014
January	10	7	9
February	5	9	2
March	11	7	6
April	7	9	12
May	10	6	7
June	10	4	6
July	12	9	5
August	9	7	6
September	5	5	6
October	4	9	9
November	12	5	5
December	10	10	8
Total deaths	105	87	81

preference, while only 11 (5.5%) referred to themselves as (or were declared to be by their families) atheists. In terms of education, only 37 patients (18.5%) had completed high school and 28 (14%) had a bachelor's degree. Most of the patients had some kind of financial support, whether their own (96.5%) or that received from their family (92%). Family and own financial support was available for most of the patients (92% and 96.5%, respectively). One hundred and thirty-eight (69%) of the patients were admitted directly from the emergency room; the rest were transferred from a ward. As can be seen in Figure 1, a previous admission to the hospital in the year prior to the current admission was seen in 99 of the patients (49.5%). Forty-nine occurred within 1 month following a hospital discharge from a different facility. Twenty-seven of those cases had at least 1 admission to the ICU. A total of 143 patients (73%) required mechanical ventilation upon arrival at the ICU, of which 73 patients (36.5%) required both mechanical ventilation and vasopressor support. APACHE II scores were calculated and documented in 62 patients. Fifty of those patients scored over 20, with a mean of 26 for all the cases, conferring a nonsurgical mortality of 40% and 50%, respectively. Those who died within the first 24 hours of admission to the ICU (26 patients) had a mean APACHE II score of 30, correlating with a mortality of 73%. Nonetheless, only 29 (14.5%) patients admitted to the ICU had a documented advance directive. A palliative-

service evaluation was requested in 56% (n = 98) of the cases who survived more than 24 hours after admission (Figure 2 and Figure 3). Life support was withdrawn from 18 patients, representing 10% of the Veterans who survived more than 1 day in the ICU; the mean length of stay for these individuals was 18 days. Length of stay distributed by days is shown in Table 2. Twenty-six patients died in less than 24 hours, representing 13%; for those who survived more than 1 day (n = 174), the mean length of stay was 15 days.

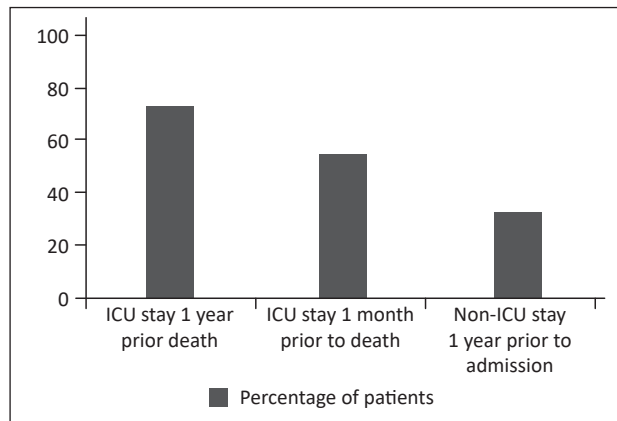


Figure 1. Patient deaths after ICU/Non-ICU stays

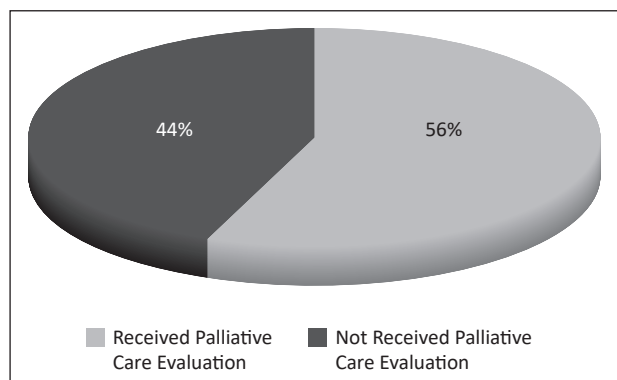


Figure 2. Percentage of patients who received Palliative-Care consults during stays and who died more than 24 hours after admission

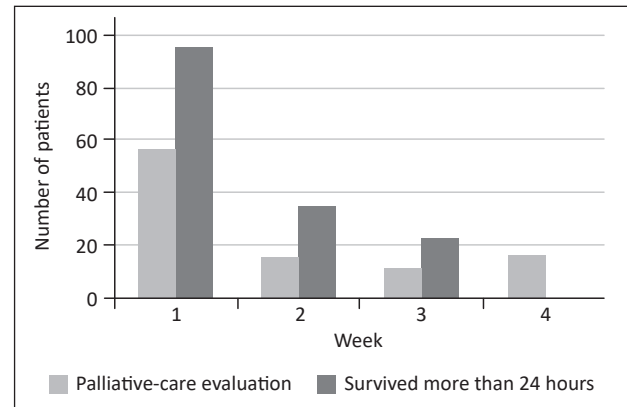


Figure 3. Palliative-Care evaluation on those who survived more than 24 hours after admission

Table 2. Length of stay distributed by days in patients who died in the intensive care unit: 2012 – 2014.

Days	Number of patients who survived 24 hours or more	%
1 – 7	95	47.5
8 – 14	35	17.5
15 – 21	22	11
22 – 30	10	5
31 – 60	10	5
61 – 90	2	1
>90	0	0

Discussion

Mortality, over the last 3 years in our ICU, showed a slight decreasing trend across the examined period. Despite the increase in the number of deaths that occurred during the spring, most of the deaths reported in the ICU occurred during the winter season (8). This finding may be associated with the implementation of a rapid response team (RRT). The RRT has a physician who will provide additional acute care management, which may translate to fewer transfers to the ICU. Therefore, the likelihood of dying in the ICU decreases. In addition, there has been a tendency to obtain advance directives (such as do-not-resuscitate orders), allowing a given patient to continue receiving palliative care outside of the ICU, while waiting for the time of death. As compared to other published data (3), our data showed most of the deaths occurred in patients less than 79 years old, although the difference in gender ratio in our study

can be explained by the predominance of men in the veteran population. Another explanation may be that older patients receive earlier palliative-care consults and are, therefore, not going to the ICU for end-of-life care. About 40% of the patients in our study had some type of mental and/or physical illness, which is important when making a prognosis after a new serious event takes place. Such a scenario suggests that the recuperative capacity of a given patient, and what to expect further, must be discussed with that person's family before his or her admission to the ICU (9).

Fewer than 15% of patients in our study had some type of advance directive (including do-not-resuscitate orders), this though, nearly half of all the patients had been previously admitted to a hospital facility at least once during the year prior to the current admission. This suggests that there is a lack of insight in regard to short-term prognosis, which is consistent with previously documented work that recommends an early palliative approach when dealing with members of this patient population. As stated by Hua et al (10), patients with critical illnesses and at high risk of death should have their palliative-care needs determined before admission to the ICU to avoid the provision of treatment perceived as being futile (11–12).

Previous studies have suggested that there is a lack of knowledge about multiple aspects of palliative care in Latin America. Different areas have remained unexplored, including the need for specialized palliative care. Multiple causes for the lack of such specialized care have been reported, such as the need for trained healthcare staff in this area, deficiencies in healthcare policy, and medicolegal issues that may result in litigation (13). Mahara and Harding's systemic review describing palliative care (current models in use and current needs, interventions practiced, and common outcomes) in the Caribbean addresses the reality of the different healthcare systems in the Caribbean. Although data about PR was not included in the above-mentioned study, the situation does not differ too much from what exists on other islands in the Caribbean. The island is geographically located between the Caribbean Sea and the North Atlantic Ocean and is to the east of the Dominican Republic. It has an estimated population of 3,589,357, of which 99% are Latino. In addition, 17.5% of the inhabitants are aged above 65 years, with a male-to-female ratio of 0.76 and a mean life expectancy of 79.25 years for the members of both sexes (14–16).

For the terminally ill in PR, different alternatives of hospice and palliative care are available. The former is mostly limited to home-care hospice. However, on many occasions, a patient will arrive at the hospital during the final phase of his or her disease. The individual is then admitted into the internal medicine ward or into the ICU, where most of the elements of end-of-life care occur. As is the case in other parts of Latin America, in PR there is a lack of formal protocol and a multidisciplinary approach in the ICU for these patients who are facing their final moments of life. The latter may be attributed to deficiencies in healthcare policies and the current socioeconomic situation and

monetary fiscal collapse (17). This reality is not the same for our institution. At the Veterans Affairs Caribbean Healthcare System, located in San Juan, PR, a protocol exists with a multidisciplinary approach to providing both palliative and/or hospice care, either in the ward or in the ICU. The incorporation of a palliative-care service as an integrative or a consultative model has shown great effectiveness in terms of length of stay, ICU costs (their reduction, usually), documentation of care goals, and the overall addressing of family and patient palliative-care needs. In addition, the addition of palliative-care screening tools and the practice of early recognition (upon arriving at the hospital) have been demonstrated to be effective in terms of identifying patients who need palliative-care consultations (18). As an alternative measure, the use of these tools in the ED (before a given patient's admission to ICU) must be considered as a way to facilitate early recognition. This strategy may be used as well to identify patients who are at risk prior to their being discharged home from the medicine ward and who may benefit from an early palliative-care evaluation.

End-of-life and withholding-of-treatment decisions are not easy for family members, the physician, or the involved staff members. Most of the time, under ICU circumstances, the family members are unable to participate in the decision due to the critical nature of a given patient's illness. In addition, the staff must address different aspects besides the actual medical treatment. These other aspects may include social-cultural status, religious beliefs, and cultural factors, any one or all of which may be different from those of the next of kin, family members, or surrogates. These differences may cause disagreements between patients and their surrogates in end-of-life decisions.

The decision to limit life-sustaining treatment has usually been proposed for elderly patients. However, age as a sole criterion is controversial, and, as the population of older patients increases in size, along with hospital costs associated with that population, the need for an additional list of criteria and tools for the screening of and deciding on adequate candidates for the withholding of life support is evident (19). Early identification and discussion with a given patient and his or her caregivers will provide an overall view of prognosis and what to expect during the last days of that person's life, while also embracing the ethical principles of confidentiality, non-maleficence, beneficence, justice, and autonomy.

Conclusion

Only a small percentage of the patients who died in the ICU had advance directives at the time of admission, this though all were of advanced age, had recently been discharged after a prior hospital stay, suffered from 1 or more chronic illnesses, or had a history of mental or physical disease. Our findings underscore the need for the early referral of such patients to a palliative specialist in order to clarify and understand a given patient's wishes for care at the end of life and thereby prevent the suffering of both the patient and his or her family.

This issue must be addressed prior to that patient's admission to the ICU, either in the emergency room or prior to that individual's being discharged home from the medicine ward. A systematic approach must be developed and validated to identify those patients not having advance directives and having the characteristics detailed above.

Resumen

Objetivo: Documentar el perfil de los pacientes atendidos por el servicio de cuidado paliativo (PS, por sus siglas en inglés) que murieron en la unidad de cuidados intensivos (ICU, por sus siglas en inglés) del Veterans Affairs Caribbean health Care System y datos relacionados. **Métodos:** Se revisaron los expedientes de los sujetos que murieron en ICU desde el 1 de enero de 2012 al 31 de diciembre de 2014. Se colectaron datos demográficos, comorbilidades preexistentes, causa de muerte, duración de la hospitalización, evaluación por el PS y el retiro del soporte vital (si este ocurrió). **Resultados:** Un total de 200 pacientes cumplieron con los criterios, la mayoría fueron hombres. Todas las mujeres y el 50% de los hombres tenían más de 79 años de edad. Setenta y tres por ciento de los pacientes admitidos estaban dependientes de ventilación mecánica en su mayoría desde el Departamento de Emergencia. Menos del 15% tenían directrices avanzadas. Cuarenta y nueve por ciento habían sido admitidos a un centro hospitalario por lo menos una vez durante el último año. La mayoría de los pacientes (60.5%) murió en la primera semana, mientras que el 13% murió dentro de las primeras 24 horas. Evaluación por el PS se pidió en el 56% de los que sobrevivieron más de 24 horas, donde sólo al 10% se le retiró el soporte vital. **Conclusión:** Un pequeño porcentaje de pacientes que fallecieron en ICU tenían directrices adelantadas al momento de la admisión a pesar de la edad avanzada, alta hospitalaria reciente, varias enfermedades crónicas, y antecedentes de enfermedad mental o física. Nuestros resultados resaltan la necesidad de identificar pacientes en la unidad de cuidados intensivos que se beneficien de una consulta temprana al servicio de cuidado paliativo.

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