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REVIEW

CURATIVE TO PALLIATIVE CARE TRANSITION CHALLENGES IN THE INTENSIVE CARE UNIT: A NARRATIVE REVIEW

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Abstract**Background:** The need for high-quality palliative care services for critically ill patients and their families remains highly important.**Purpose:** This review presents the benefits and barriers to implementing palliative care in Intensive Care Units (ICUs) and suggests ways to facilitate the shift from therapeutic to palliative care.**Methods:** PubMed, Scopus, and Google Scholar databases were searched online. Studies included were eligible for the provision of palliative care in the ICU, published in English from 2012 through 2022.**Results:** Evidence shows that integrating palliative care impacts the quality of life in ICUs and increases rates of use of palliative care facilities. On the other hand, decreasing the length of stay affects the cost and the opportunity cost of the ICU. The data suggest that a large subset of ICU patients would benefit from palliative care, but palliative care remains underutilized in the ICU. Lack of training in palliative care, organizational factors, decisions about end of life, lack of defined criteria for inclusion, and life-saving culture of the ICU are barriers to providing palliative care. Efforts should focus on education, support for effective communication and decision-making, early integration of a palliative approach, redesign of clinical protocols, and reallocating resources to provide an environment conducive to quality at the end of life.**Conclusion:** Involving palliative care in critically ill patients has reduced ICU resource use. Nurses need to define their essential management roles within the multidisciplinary critical care team and help develop systems by which these roles can be implemented.**Keywords:** Intensive care unit, palliative care, nursing care, challenges.**Corresponding Author:** Sotiria Koutsouki, email: sotiriak73@yahoo.gr

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INTRODUCTION

Palliative care is the active, holistic care of people of all ages suffering from serious illnesses, particularly those near the end of life. It aims to improve the quality of life for patients, their families, and carers.¹ Palliative care as an inter-professional specialty is increasingly essential in the comprehensive approach to seriously ill patients.² Palliative care cornerstone involves patient-centered decision-making and addressing the patient's symptom set. In the case of acute clinical deterioration of ICU patients, which is usually unexpected and with unpredictable outcomes, the role of palliative care becomes less clear, with particular challenges in its implementation.³

The aging of the world population, the increasing prevalence of comorbidities, advances in medical treatment, and the prolongation of life in people with chronic diseases have increased the demand for intensive treatment. The proportion of people aged over 80 years is expected to double further by 2050, and the proportion of deaths due to frailty is likely to increase further. However, hospitals remain the most common place of death in most OECD countries.⁴ According to Hall et al., in 2010, there were a total of 2.5 million deaths in the United States; one-third (33%) of all deaths occurred in hospitals,⁵ while 10% to 29% of hospital deaths involved adult ICU patients.⁶ Since 2000, the percentage of Medicare beneficiaries receiving ICU care in the last month of life has increased from 24% to 29%, meaning the need for ICU palliative care will increase.⁷ Recently, the lack of utilization of palliative care in patients with COVID-19 admitted to ICU has been highlighted. In the study by Sheehan et al. of 151 critically ill patients with COVID-19 pneumonia requiring ICU admission, only 59 (39.07%) received palliative care.⁸ The COVID-19 pandemic made clear the need for integrating palliative care across hospital units and in the community globally, considering the goals of care and patient preferences within the context of limited resources.⁹ This review aims to present the benefits and barriers to implementing palliative care in the ICU and suggest ways to facilitate the shift from therapeutic to palliative care.

METHOD

The primary method of investigation was an online search of

PubMed, Scopus and Google Scholar databases. The search strategy included the terms: "intensive care unit" AND "terminal care" OR "end of life care" AND "palliative care" AND "nursing care."

Selection criteria:

1. Include at least three search terms in the title or abstract.
2. Significant discussion of at least three search terms in the body of the paper.
3. Primary studies focused on palliative care of adult ICU patients.
4. Studies published in the English language.
5. Studies with publication dates from 2012–2022.
6. Studies with full text.

Exclusion criteria: Studies that did not meet the selection criteria described above.

RESULTS

A. The contribution of palliative care in the ICU

Impact on quality of life in the ICU

In the study by Chapman et al., compared to those in the pathology-surgical wards, ICU patients were more likely to receive palliative care advice on goals of care, pain and symptom management, and withdrawal of interventions that prolong the death process.¹⁰ Similarly, the study by Helgeson et al. provided evidence that early palliative care counseling, within 24 hours of admission to the ICU, improved patient satisfaction with significant benefits.¹¹ Although the evidence suggests that early palliative care involvement during severe illness is essential. Further studies are needed to determine its impact on ICU patients with particular emphasis on outcomes such as quality of life based on patients' perceptions rather than the perceptions of their families.

Reducing the use of ICU at the end of life

In several studies, the provision of palliative care in the ICU has been associated with increased rates of advance care planning, increased use of palliative care facilities, decreased length of stay, and decreased use of non-beneficial life-sustaining treatments.¹¹⁻¹⁷ In addition, the study by Ma et al. found that routine palliative care can positively influence the care of critically ill patients. In contrast, early palliative care counseling was posi-

tively associated with more excellent transitions to do-not-resuscitate/non-intubation, hospitalization in palliative care facilities, and reduced use of healthcare resources pre-ICU and post-ICU.¹⁸ There was also a significant reduction in ICU admissions (38%).¹⁹ As well as in-hospital mortality rates.²⁰ However, Melville et al. highlight that patients admitted to the ICU for end-of-life care management or potential organ donation represent a small proportion of total ICU admissions. Have a shorter length of stay in the ICU than other patients, suggesting that resource use for these patients is not disproportionate.²¹

Reducing the cost of end-of-life ICU care

If advance care planning and palliative care counseling were systematically provided in the ICU, ICU cost savings would be 25%, which could result in cost savings of 1.9 billion, representing a 6% reduction in total hospital costs for these patients.²² Providing family palliative care sessions within seven days of ICU admission led to decisions to withdraw non-beneficial life-sustaining treatments and significantly reduced healthcare costs.²³ The results of the study by Siddiqui et al. in a sample of 848 critically ill patients transferred from secondary hospitals to tertiary care center ICUs for skilled care demonstrate that early palliative care counseling can lead to early discussions of care goals and optimization of ICU resources.²⁴ The above studies offered significant evidence of the impact of early palliative care counseling in the ICU on cost reduction and the opportunity cost of ICU.

Impact on the opportunity cost of ICU

A positive element of the impact of palliative care in the ICU is the opportunity cost, defined simply as the additional income that could have been gained if the money had been used differently. Binney et al., in their 2014 study of two Atlanta academic hospitals, reported that patients transferred to dedicated inpatient units saved 585 ICU bed days. The average length of stay in the particular hospital unit was 3.5 days, translating to avoiding a daily cost of \$2362 and thus saving an annual cost of approximately \$1,400,000.²⁵ Heydari et al. report that if conditions could be ensured, at least 20% of patients with terminal cancer would receive home-based palliative care. One thousand home deaths would be noted, and 1000 ICU beds

would be freed up annually for use in other patients with a better prognosis for survival.²⁶ Dedicated inpatient units are a feasible way of providing care for end-stage ICU patients and are potentially significant sources of savings in the healthcare system. The data suggest that palliative care would benefit a large subset of ICU patients. However, specialist palliative care remains underutilized in the ICU setting and for the subset of patients who die in the ICU.^{27,28,29,30,31} This leads to the assessment that integrating palliative care into clinical practice needs to be universally accepted. Nevertheless, previous studies show a need for more meaningful, consistent, and comprehensive outcomes of palliative care interventions in the ICU.²⁷ Regardless of the impact on healthcare costs, when therapeutic efforts fail, they should give way to a palliative approach because palliation is the most significant benefit to the patient. Nevertheless, the emphasis on identifying cost-effective ways to provide quality end-of-life care must remain at the forefront of economic and social consciousness, as it likely affects all of society.

B. Difficulties of Transition

The care of dying patients is an integral part of intensive care. However, critical care staff reports barriers to providing quality palliative care that negatively impacts patients and families.^{32,33}

Lack of training in palliative care

Many ICU nurses need to be trained in palliative care. In the study by Khater et al., ICU health professionals report the need for education on the practical implementation of palliative care.³⁴ Duran-Crane et al. highlighted the increasing demand from professionals for the involvement of palliative care teams in the management of dying patients in the ICU and the need to facilitate early involvement to develop integrated pain management strategies further.³⁵

Organizational factors

The ICU is a demanding and complex care environment. Organizational barriers make it challenging to implement even when the necessary knowledge and skills are acquired to introduce palliative care in the ICU. Hospital factors such as high degree of specialization, availability of tests and routine interventions,³⁶ the lack of adequately developed end-of-life care structures,³⁷ were reported in recent studies as barriers to a patient's transition from curative to palliative care. Specialized

palliative care professionals need to be improved in most European countries, unlike in the United States, where it is a recognized specialty capable of supporting patients in different care settings.³⁸ Lack of qualified palliative care professionals limits growth and prevents many hospitals from responding to a palliative care program. As specialties such as critical care increasingly recognize the benefits of palliative care, advocacy for needed resources and staffing is essential.

Making decisions about the end of life

Inadequate training of health professionals in communication and other skills necessary to provide high-quality end-of-life care; unrealistic expectations of intensive care treatments on the part of patients, families, and health professionals; and provider or family refusal to leave the ICU are barriers to implementing palliative care.^{32,38,39} Fragmentation of medicine has likely contributed to this situation, as it has shifted the focus from patient and holistic goals to disease. The inability to relieve patients through the illusion that they can be cured relegates death to an adverse event, a statistical fact, or an unnatural element that cannot be treated. The consequences of this underestimation can create significant errors in ethics, communication, and care.⁴⁰ Routine palliative care consultation in ICUs and referral by intensivists to their palliative care colleagues are rare. In addition, the approach to end-of-life by critical and palliative care physicians may differ.³ Poor understanding of palliative care is a significant barrier to its widespread implementation in ICUs. Physicians may only be willing to undertake palliative care services if their patients have been formally identified as imminently dying, following the traditional view that palliative and critical care are mutually exclusive rather than mutually reinforcing forms of care. A further factor complicating the integration of palliative care into ICU practices is that end-of-life care varies considerably between countries and healthcare systems.³⁸

The lack of defined criteria for inclusion in palliative care ICU patients

Alliprandini et al. report that one-third of patients who died in the ICU had criteria for end-of-life management through palliative care. However, palliative care was only adequately provided for 15% of patients, with high heterogeneity and delays in

its initiation.⁴¹

Scoring systems such as the APACHE or SAPS scales, which indicate prognosis, could help identify patients unlikely to benefit from ICU treatment. However, these scores may perform well at a population level but are limited for the individual patient, significantly undermining their use for clinical decision-making.⁴² Secunda et al. argue that designating critically ill ICU patients for specific palliative care based on predicted mortality does not adequately reflect the actual use of palliative care in the ICU. Reliance on such triggers may inadvertently overlook a significant population of patients with clinician-identified palliative care needs.⁴³

Hua et al. report that a hospital stay greater than ten days, multi-system organ failure, stage IV malignancy, status after cardiac arrest, and intracerebral hemorrhage under mechanical ventilation were criteria for activation of palliative care to ICU. These criteria may be sufficient inclusion measures against estimates of mortality and morbidity.⁴⁴

The life-saving culture of the ICU

ICU care is characterized by the aggressive use of often invasive technology designed to save critically ill patients from death. In contrast, high-quality end-of-life care provides patients with a death free of pain or unwanted interventions under the loving care of the family environment.⁴⁵ ICU, generally based on a life-saving mentality, can create a hierarchy of patient priority. A decision to shift the focus of care places the patient in a lower priority compared with other patients in the ICU. This inherent intensive care culture can facilitate and impede end-of-life care in the ICU.³⁹ However, saving lives is a goal that in many ways overrides the usual concerns about patient autonomy, and the loss of dignity seems an acceptable price to pay.⁴⁶

C. Suggestions for the integration of palliative care into intensive care

Early integration of a palliative approach in intensive care promotes quality of care.³⁹ Efforts should focus on education, support for effective communication and decision-making, early integration of a palliative approach, redesign of clinical protocols, and reallocating resources to provide an environment conducive to quality at the end of life.

Education

The COVID pandemic resulted in a high volume of critically ill patients requiring advanced life-sustaining treatments in ICUs, further highlighting that healthcare professionals need knowledge and skills in the fundamentals of palliative care.⁹ ICU nurses consider participation in discussions about prognosis, goals of care, and palliative care as a critical component of the overall quality of patient care. Significant interventions are needed to ensure nurses have the education, opportunities, and support to participate actively in these discussions.⁴⁷ Equipping healthcare providers with the knowledge and expertise to provide palliative care is essential to dispelling myths and facilitating the delivery of palliative care in any setting.³⁴ Culture is vital; therefore, scientific societies, especially university faculties, should take more responsibility and promote programs focusing on the patient's needs rather than the disease, including learning how to communicate with patients and family members.⁴⁰ The Center to Advance Palliative Care (CAPC, www.capc.org) provides healthcare professionals with tools, training, and technical assistance to develop palliative care programs in hospitals and other settings. Recently, a new initiative focused on improving ICU palliative care has been launched with the IPAL-ICU program (<http://www.capc.org/ipal-icu/>).⁴⁸ Nurses can prepare themselves to participate effectively in end-of-life care planning by participating in relevant training.

Support for effective communication and decision-making

The study by Visser et al. found strong evidence that physicians need more education and communication skills.⁴⁹ Early and effective communication with patients and family members about goals of care, advance care planning, and the transition from curative to palliative care is required to integrate care delivered following the patient's values and preferences.³ Attitudes, empathy, and communication are essential to end-of-life care.⁵⁰ The challenge is to identify the resources and incentives for the widespread dissemination of specific educational programs that improve the communication skills of ICU health professionals so that they can ensure effective end-of-life communication.⁴⁵ Nurses working in the ICU are estimated to spend 86% of their time in direct contact with the patient, ap-

proximately 73% to 78% more than physicians or other ICU staff respectively.⁵¹ Their role is critical in the provision of palliative care, as they assess the need for palliative care, serve as communication coordinators between staff, patient and family, and support patients and family.⁵²

Enhancing the integration of palliative care models in the ICU

Three distinct models have been proposed to help better integrate palliative care in the ICU: The holistic model, which seeks to integrate palliative care principles and interventions into daily ICU practice and is provided by ICU physicians as part of routine practice, the consultative model, which focuses on increasing the involvement and effectiveness of external palliative care consultants in the care of ICU patients and their families and the mixed model which incorporates both of these strategies.^{53,54} Improving the palliative care skills of ICU health professionals may increase palliative care consultations by increasing the ability of the ICU team to identify unmet palliative care needs,^{55,56} as an expansion of specialized palliative care training seems unlikely. Palliative care in the ICU remains intensive care. Ensuring that the needs of patients and their families are met holistically will require leadership, advocacy, persistence, and rapid culture change. Nurses are in an ideal position to ensure this is provided, disseminated, and empathetically translated into practice towards improving quality outcomes and human-centered care.

Reallocation of resources

Redesigning resource reallocation may also be required to promote more effective care. Clinical priorities change near the end of life, and care measures must be adjusted accordingly. Overtreatment avoidance needs better penetration, and implementation of palliative care, with hospitals investing in such services. These efforts require clinically meaningful and actionable measures, such as documentation of advance care planning, availability of palliative care consultants prior to ICU admission, and access to ethics committees to mediate disagreements. Support at the institutional level is essential to overcome the various barriers.¹⁰ Many scientific institutions encourage the development of clinical palliative care programs at the local level in hospitals and healthcare organizations.^{34,57}

Healthcare professionals in the ICU have to support in every way possible the dignity of the patient and the interventions that need to be made to improve palliative care and the quality of life that remains. Healthcare professionals in the ICU have to support in every way possible the dignity of the patient and the interventions that need to be made to improve palliative care and the quality of life that remains.

CONCLUSIONS

Although multiple interventions have evaluated palliative care in the ICU, they are limited by a lack of common outcomes. Involving palliative care in critically ill patients has reduced ICU resource use. Further research is needed on criteria for identifying and referring patients who will benefit from early palliative care involvement in the future and on the effectiveness and efficiency of efforts to integrate palliative care inside and outside the ICU using valid outcome measures. Education, support for effective communication and decision-making, redesign of clinical protocols, reallocating resources, and establishing national policies are essential to improve the quality of care. Nurses need to define their essential management roles within the multidisciplinary critical care team and help develop systems by which these roles can be implemented.

REFERENCES

1. Radbruch L, De Lima L, Knaut F, et al. Redefining Palliative Care-A New Consensus-Based Definition. *J Pain Symptom Manage*. 2020;60(4):754-764.
2. Kelley AS, Morrison RS. Palliative care for the seriously ill. *N Engl J Med* 2015; 373:747-755.
3. Botha J, Tiruvoipati R, Goldberg D. Futility of medical treatment in current medical practice. *The New Zealand medical journal*. 2013;126(1383):58-71.
4. OECD. Health at a Glance 2021: OECD Indicators, OECD Publishing, Paris, <https://doi.org/10.1787/ae3016b9-en>. Accessed 12/6/22.
5. Hall MJ, Levant S, De Frances CJ. Trends in inpatient hospital deaths: National Hospital Discharge Survey, 2000-2010. *NCHS Data Brief*. 2013;(118):1-8.
6. Society of Critical Care Medicine. Critical care statistics. <https://www.sccm.org/Communications/Critical-Care-Statistics>, 2017. Accessed 20/7/2022.
7. Teno JM, Gozalo PL, Bynum JP, Leland NE, Miller SC, Morden NE, Scupp T, Goodman DC, Mor V. Change in end-of-life care for Medicare beneficiaries: site of death, place of care, and health care transitions in 2000, 2005, and 2009. *JAMA* 2013; 309:470-477.
8. Sheehan J, Ho KS, Poon J, Sarosky K, Fung JY. Palliative care in critically ill COVID-19 patients: the early New York City experience. 2020;bmj:spcare-2020-002677.
9. Rosa WE, Ferrell BR, Wiencek C. Increasing Critical Care Nurse Engagement of Palliative Care During the COVID-19 Pandemic. *Critical care nurse*. 2020;40(6):e28-e36.
10. Chapman AC, Lin JA, Cobert J, Marks A, Lin J, O'Riordan DL, et al. Utilization and Delivery of Specialty Palliative Care in the ICU: Insights from the Palliative Care Quality Network. *Journal of pain and symptom management*. 2022;63(6):e611-e9.
11. Helgeson SA, Burnside RC, Robinson MT, Mack RC, Ball CT, Guru PK, et al. Early Versus Usual Palliative Care Consultation in the Intensive Care Unit. *The American Journal of Hospice & palliative care*. 2022;10499091221115732.
12. Mazutti SR, Nascimento AF, Fumis RR. Limitation to Advanced Life Support in patients admitted to intensive care unit with integrated palliative care. *Revista Brasileira de terapia intensiva*. 2016;28(3):294-300.
13. Khandelwal N, Kross EK, Engelberg RA, Coe NB, Long AC, Curtis JR. Estimating the effect of palliative care interventions and advance care planning on ICU utilization: a systematic review. *Critical care medicine*. 2015;43(5):1102-11.
14. Hua M, Lu Y, Ma X, Morrison RS, Li G, Wunsch H. Association Between the Implementation of Hospital-Based Palliative Care and Use of Intensive Care During Terminal Hospitalizations. *JAMA network open*. 2020; 3(1):e1918675.
15. Romano AM, Gade KE, Nielsen G, Havard R, Harrison JH, Jr., Barclay J, et al. Early Palliative Care Reduces End-of-Life Intensive Care Unit (ICU) Use but Not ICU Course in

- Patients with Advanced Cancer. *The oncologist*. 2017;22(3):318-23.
16. Zalenski RJ, Jones SS, Courage C, Waselewsky DR, Kostaroff AS, Kaufman D, et al. Impact of Palliative Care Screening and Consultation in the ICU: A Multihospital Quality Improvement Project. *Journal of pain and symptom management*. 2017;53(1):5-12.e3.
 17. Horton JR, Morrison RS, Capezuti E, Hill J, Lee EJ, Kelley AS. Impact of Inpatient Palliative Care on Treatment Intensity for Patients with Serious Illness. *Journal of palliative medicine*. 2016;19(9):936-42.
 18. Ma J, Chi S, Buettner B, Pollard K, Muir M, Kolekar C, et al. Early Palliative Care Consultation in the Medical ICU: A Cluster Randomized Crossover Trial. *Critical care medicine*. 2019;47(12).
 19. Yosick L, Crook RE, Gatto M, Maxwell TL, Duncan I, Ahmed T, et al. Effects of a Population Health Community-Based Palliative Care Program on Cost and Utilization. *Journal of palliative medicine*. 2019;22(9):1075-81.
 20. Martins B, Oliveira RA, Cataneo AJM. Palliative care for terminally ill patients in the intensive care unit: Systematic review and meta-analysis. *Palliative & supportive care*. 2017;15(3):376-83.
 21. Melville A, Kolt G, Anderson D, Mitropoulos J, Pilcher D. Admission to Intensive Care for Palliative Care or Potential Organ Donation: Demographics, Circumstances, Outcomes, and Resource Use. *Critical care medicine*. 2017;45(10):e1050-e9.
 22. Khandelwal N, Benkeser DC, Coe NB, Curtis JR. Potential Influence of Advance Care Planning and Palliative Care Consultation on ICU Costs for Patients With Chronic and Serious Illness. *Critical care medicine*. 2016;44(8):1474-81.
 23. Chang HT, Jerng JS, Chen DR. Reduction of healthcare costs by implementing palliative family conference with the decision to withdraw life-sustaining treatments. *Journal of the Formosan Medical Association*. 2020;119(1Pt1):34-41.
 24. Siddiqui ST, Xiao E, Patel S, Motwani K, Shah K, Ning X, et al. Impact of Palliative Care on Interhospital Transfers to the Intensive Care Unit. *Journal of critical care medicine*. 2022;8(2):100-6.
 25. Binney ZO, Quest TE, Feingold PL, Buchman T, Majesko AA. Feasibility and economic impact of dedicated hospice inpatient units for terminally ill ICU patients. *Critical care medicine*. 2014;42(5):1074-80.
 26. Heydari H. Home-based Palliative Care: A Strategy for Keeping Intensive Care Unit Beds Vacant. *International Journal of Community-Based Nursing and Midwifery*. 2016;4(2):186-7.
 27. Metaxa V. End-of-Life Issues in Intensive Care Units. Seminars in respiratory and critical care medicine. 2021;42(1):160-8.
 28. Dy SM, Aslakson R, Wilson RF, Fawole OA, Lau BD, Martinez KA, et al. Closing the quality gap: revisiting the state of the science (vol. 8: improving health care and palliative care for advanced and serious illness). Evidence report/technology assessment. 2012; (208.8):1-249.
 29. Sprung CL, Truog RD, Curtis JR, Joynt GM, Baras M, Michalsen A, et al. Seeking worldwide professional consensus on the principles of end-of-life care for the critically ill. The Consensus for Worldwide End-of-Life Practice for Patients in Intensive Care Units (WELPICUS) study. *American Journal of Respiratory and critical care medicine*. 2014;190(8):855-66.
 30. Seamen JB, Barnato AE, Sereika SM, et al. Patterns of palliative care service consultation in a sample of critically ill ICU patients at high risk of dying. *Heart Lung*. 2017; 46:18-23.
 31. Decato TW, Engelberg RA, Downey L, et al. Hospital variation and temporal trends in palliative and end-of-life care in the ICU. *Crit Care Med*. 2013;41:1405-1411.
 32. Kyeremanteng K, Beckerleg W, Wan C, et al. Survey on Barriers to Critical Care and Palliative Care Integration. *Am J Hosp Palliat Care*. 2020;37(2):108-116.
 33. Ganz FD, Sapir B. Nurses' perceptions of intensive care unit palliative care at end of life. *Nurs Crit Care*. 2019; 24(3):141-148.
 34. Khater WA, Akhu-Zaheya LM, Al-Nabulsi HW, Shattnawi KK, Shamieh O, Joseph R. Barriers to implementing pallia-

- tive care in intensive care units: perceptions of physicians and nurses in Jordan. *International journal of palliative nursing*. 2021;27(2):98-106.
35. Durán-Crane A, Laserna A, López-Olivo MA, et al. Clinical practice guidelines and consensus statements about pain management in critically ill end-of-life patients: a systematic review. *Crit Care Med*. 2019;47(11):1619–1626.
 36. Turnbull AE, Krall JR, Ruhl AP, Curtis JR, Halpern SD, Lau BM, et al. A scenario-based, randomized trial of patient values and functional prognosis on intensivist intent to discuss withdrawing life support. *Critical care medicine*. 2014;42(6):1455-62.
 37. Konstantara E, Vandrevalla T, Cox A, Creagh-Brown BC, Ogden J. Balancing professional tension and deciding upon the status of death: Making end-of-life decisions in intensive care units. *Health psychology open*. 2016;3(1):2055102915622928.
 38. Nelson MJE, Azoulay PE, Curtis JR, et al. Palliative Care in the ICU. *J Palliat Med*. 2012;15:68–74.
 39. Vaughn L, Santos Salas A. Barriers and facilitators in the provision of palliative care in critical care: A qualitative descriptive study of nurses' perspectives. *The Canadian Journal of Critical Care Nursing*. 2022;33(1):14–20.
 40. Romano M. The Role of Palliative Care in the Cardiac Intensive Care Unit. *Healthcare (Basel, Switzerland)*. 2019;7(1).
 41. Alliprandini M, Ferrandin A, Fernandes A, Belim M, Jorge M, Colombo B, et al. End-of-life management in intensive care units: a multicenter observational prospective cohort study. *Anaesthesiology intensive therapy*. 2019;51(5):348-56.
 42. Vincent JL. When ICU Treatment Becomes Futile. *J Clin Res Bioeth*. 2014;5(186).
 43. Secunda KE, Krolikowski KA, Savage MF, Kruser JM. Evaluation of automated specialty palliative care in the intensive care unit: A retrospective cohort study. *PloS one*. 2021;16(8):e0255989.
 44. Hua M, Li G, Blinderman C, Wunsch H. Estimates of the need for palliative care consultation across United States intensive care units using a trigger-based model. *Am J Respir Crit Care Med*. 2014; 189:428-436.
 45. Angus DC, Truog RD. Toward Better ICU Use at the End of Life. *JAMA*. 2016;315(3):255-256.
 46. Koksvik GH. Dignity in Practice: Day-to-Day Life in Intensive Care Units in Western Europe. *Medical anthropology*. 2015;34(6):517-32.
 47. Anderson WG, Puntillo K, Boyle D, et al. ICU Bedside Nurses' Involvement in Palliative Care Communication: A Multicenter Survey. *J Pain Symptom Manage*. 2016;51(3):589-596.e2.
 48. Hua M, Wunsch H. Integrating palliative care in the ICU. *Current opinion in critical care*. 2014;20(6):673-80.
 49. Visser M, Deliens L, Houttekier D. Physician-related barriers to communication and patient- and family-centered decision-making towards the end of life in intensive care: a systematic review. *Critical care (London, England)*. 2014;18(6):604.
 50. Connolly C, Miskolci O, Phelan D, Buggy DJ. End-of-life in the ICU: moving from withdrawal of care to palliative care, patient-centered approach. *British Journal of Anaesthesia*. 2016;117(2):143-5.
 51. Butler R, Monsalve M, Thomas GW, et al. Estimating time physicians and other healthcare workers spend with patients in an intensive care unit using a sensor network. *Am J Med*. 2018;131(8):972.e9-972.e15.
 52. Anderson WG, Puntillo K, Cimino J, et al. Palliative care professional development for critical care nurses: a multicenter program. *Am J Crit Care*. 2017;26:361-371.
 53. Pan H, Shi W, Zhou Q, Chen G, Pan P. Palliative Care in intensive care Unit: Not Just End-of-life Care. *Intensive Care Research*. 2022.
 54. Schoenherr LA, Bischoff KE, Marks AK, O'Riordan DL, Pantilat SZ. Trends in Hospital-Based Specialty Palliative Care in the United States From 2013 to 2017. *JAMA network open*. 2019;2(12):e1917043.
 55. Ford DW. Palliative care consultation needs in United States intensive care units. Another workforce shortage? *Am J Respir Crit Care Med*. 2014; 189(4):383-384.

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56. Gatta B, Turnbull J. Providing palliative care in the medical ICU: a qualitative study of MICU physicians' beliefs and practices. *Am J Hospice & Pall Med.* 2018; 35:1309-1313.
57. Mercadante S, Gregoretti C, Cortegiani A. Palliative care in intensive care units: why, where, what, who, when, how. *BMC anesthesiology.* 2018;18(1):106.