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World J Crit Care Med 2022 November 9; 11(6): 342-389



MINIREVIEWS

- 342 Rationale for integration of palliative care in the medical intensive care: A narrative literature review
Gupta N, Gupta R, Gupta A
- 349 Current role of high dose vitamin C in sepsis management: A concise review
Juneja D, Nasa P, Jain R

ORIGINAL ARTICLE**Retrospective Study**

- 364 Scoring systems in critically ill: Which one to use in cancer patients?
Beniwal A, Juneja D, Singh O, Goel A, Singh A, Beniwal HK

SYSTEMATIC REVIEWS

- 375 Postoperative complications and critical care management after cytoreduction surgery and hyperthermic intraperitoneal chemotherapy: A systematic review of the literature
Wajekar AS, Solanki SL, Patil VP

CORRECTION

- 387 Correction to "Retrospective analysis of anti-inflammatory therapies during the first wave of COVID-19 at a community hospital"
Iglesias JI, Vassallo AV

ABOUT COVER

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Rationale for integration of palliative care in the medical intensive care: A narrative literature review

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Abstract

Despite the remarkable technological advancement in the arena of critical care expertise, the mortality of critically ill patients remains high. When the organ functions de-teriorate, goals of care are not fulfilled and life-sustaining treatment becomes a burden on the patient and caregivers, then it is the responsibility of the physician to provide a dignified end to life, control the symptoms of the patient and provide psychological support to the family members. Palliative care is the best way forward for these patients. It is a multidimensional specialty which emphasizes patient and family-based care and aims to improve the quality of life of patients and their caregivers. Although intensive care and palliative care may seem to be at two opposite ends of the spectrum, it is necessary to amalgamate the postulates of palliative care in intensive care units to provide holistic care and best benefit patients admitted to intensive care units. This review aims to highlight the need for an alliance of palliative care with intensive care in the present era, the barriers to it, and models proposed for their integration and various ethical issues.

Key Words: Intensive care; Palliative care; Support; Barriers; Holistic care; End of life

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Core Tip: Critical care and palliative care may seem to be mutually exclusive, but the amalgamation of the two provides the best combination of care to the patients needing intensive care. Palliative care has several beneficial roles in intensive care, such as symptom control, end-of-life discussions, and providing psychological support to patients' caregivers. However, there are several barriers to its implementation. These can be overcome by education and awareness improvement, capacity building, and developing a national-level framework policy for incorporating palliative care with intensive care.

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INTRODUCTION

The aim of admitting patients to the intensive care unit (ICU) is to maintain the homeostasis of the body and to reduce overall morbidity and mortality. Despite the technological advancement and critical care expertise available, the death rate in ICU is still as high as 18.1% [1]. When the organ functions deteriorate, goals of care are not fulfilled and life-sustaining treatment becomes a burden on both the patient and caregivers, then it is the responsibility of the physician to provide a dignified end to life, control the symptoms of the patient and provide psychological support to the family members. Also, it has been observed that patients who survive the ICU stay suffer from 'post-intensive care syndrome' in which they face anxiety, stress and depression for a long period even after discharge. The same syndrome has also been identified in caregivers [2]. The possible solution to this conundrum is palliative care. It is a multidimensional specialty which emphasizes patient and family-based care. It has been defined by International Association for Hospice & Palliative Care (IAHPC) in 2018 as "The active holistic care of individuals across all ages with serious health-related suffering due to severe illness, and especially of those near the end of life. It aims to improve the quality of life of patients and their caregivers" [3]. It states that dying is a natural process and the aim is neither to quicken the death nor delay the inevitable.

Although intensive care and palliative care may seem to be at two opposite ends of the spectrum, it is necessary to amalgamate the postulates of palliative care in ICU to provide holistic care and best benefit ICU patients. This review aims to highlight the need for a coalition of palliative care with intensive care.

MATERIALS AND METHODS

Literature search strategy

Search strategy and selection criteria were developed to identify relevant articles, and key questions were formulated to construct an analytic framework. Using PubMed, Embase, and Google Scholar and a systematic review method, a comprehensive literature search was conducted with the inclusion criteria related to the role of palliative care in intensive care management, specifically studies and reports on the present status, applications, benefits, roadblocks, various models to provide palliative care in critical care setup and ethical issues related to this topic. Studies published prior to 2012 were excluded. Keywords searched included "palliative care," "intensive care," "critical care," "intensive therapy unit," "intensive care unit", "integration", "application", "barriers", "models", "benefits", "ethical issues", "pain assessment" and "capacity building initiative". The various keywords were joined using Boolean operators "And" "Or" and "Not" in various combinations to obtain the relevant articles, which were then carefully screened for eligibility for inclusion in the review. The references of relevant articles were further hand searched. This information was extracted and organized in text and tabular form. The search mainly focused on identifying studies on palliative care in relation to critical care and was then narrowed to relevant literature.

Inclusion criteria

Studies that were included had to meet the following criteria: (1) Having a publication date of on or after 2012 and in the English language; (2) studies related to palliative care and intensive care; (3) all ages, genders and ethnicities; and (4) study designs being case-control studies, case studies, case reviews, guidelines, systematic reviews, and meta-analysis.

Exclusion criteria

Studies that were published prior to 2012; articles in languages other than English; literature that did not

have a full text available; and articles reporting on interventions without evidence of integration or insufficient information to support their approach, were excluded from the review.

Data analysis

This literature review is presented as a qualitative non-meta-analysis narrative review. The data extracted is established on the grounds of previously reviewed articles. The first step in extracting the data was to decide which type of study designs were to be included in this review. Then any publication prior to 2012 was excluded. The next step was to focus on extracting those articles that were related to and supported the core concept of this review while minimizing bias and maintaining the reliability and validity of the data.

DISCUSSION

Key components of palliative care in ICU

Identifying patients who are terminally ill. Inviting patients and caregivers in the decision-making process through effective communication. Inviting a primary physician in the combined decision-making process. Ensuring appropriate ICU admission which benefits the patient. Implementing effective symptom control and management. Providing psychological support to caregivers. Using a step-down approach from ICU to ward after family meeting[4]. Providing bereavement care.

Indications for palliative care in ICU

In case of an acute catastrophic event, patients need to be admitted to ICU for intensive monitoring and better symptom control; and for conducting end-of-life care discussions with the family[5].

Indications for palliative care referral in ICU

Indications for palliative care referral in ICU included: Age > 80 years, chronic critical illness with ICU stay > 14 d; patients with multiple comorbid conditions (e.g., advanced malignancy, chronic liver/kidney disease, *etc.*); advanced medical directive from the patient requesting for minimal interventions; and conditions where life-sustaining treatments are deemed medically futile by primary physicians[6-9]. These indications for the requirement of palliative care in ICU are present in 14%-20% of admitted patients[10]. Identification of triggering factors will lead to better and effective mobilization of ICU resources and help in identifying patients' unmet palliative care needs[11]. Also, according to the recently conducted 'Cross Country Comparison of Expert Assessments of the Quality of Death and Dying' which attempted to assess the standard of end-of-life care given by various countries - India ranked 59th out of 80 countries[12]. This highlights the fact that awareness in India regarding end-of-life care is poor especially due to the reluctance to discuss openly death. Dying in ICU is considered to be impersonal and invasive. A good death is a peaceful end occurring in the presence of loved ones[13]. Thus it is imperative to provide dignified death to a terminally sick patient based on the principle of right attitude, appropriate behavior, compassion and honest communication[14].

Barriers to providing palliative care in ICU

Barriers are at two levels: (1) The level of patient and caregivers. There is an inability to accept the poor outcome, and an inability to accept that there is an endpoint to life-sustaining treatment. There are differences in opinion among caregivers. In many cases, patients are not in a physical condition to make a decision for themselves; (2) the level of the physician[15,16]. There is a misconception that palliative care is only for patients who are actively dying, a concept that if palliative care is provided, it would accelerate the death of the patient, misunderstanding that palliative care is totally different from critical care, rather than being two aspects of the holistic treatment process, challenge to assess and screen the patients for whom palliative care referral should be administered, lack of knowledge and awareness at the level of patients and the physicians are the biggest hurdle. Also, there is a lack of training at the undergraduate level which leads to this lack of knowledge related to palliative care among physicians. There are a few factors at various levels which preclude the integration of palliative care in ICU[17].

Other barriers involve the followings. There is a lack of management resources, training and knowledge among the healthcare workers to provide palliative care in ICU. Also, there is a lack of uniform guidelines and policies.

There is an absence of appropriate infrastructure to facilitate the involvement of family members in providing palliative care. Also, healthcare workers have to face a lot of moral and emotional distress while providing palliative care in ICU.

In many cases, there is disagreement among the family members regarding providing palliative care. Also, patients are unable to participate in the decision-making process during terminal illness.

Lack of communication and interaction among the members of the multidisciplinary team impedes the integration of palliative care in the ICU.

Benefits of integrating palliative care in ICU

The benefits include increased patient and caregiver satisfaction; better patient assessment and symptomatic management; decreased length of ICU and hospital stay; decreased duration of ventilation; decreased anxiety and depression among family members.

Models to provide palliative care in critical care setup

There can be various models: (1) Integration model - Palliative care principles are understood and implemented by ICU physicians without involving any palliative care specialist. The emphasis is to improve the internal system and enhance the skills and knowledge of ICU physicians in providing appropriate palliative care where required. To enhance their knowledge and skills, critical care specialists can attend various programs, *e.g.*, End of Life Nursing Education Consortium (ELNEC)-Critical Care training program and Critical Care Communication skills program ("C-3"); (2) Consultation model - The ICU clinicians request Palliative consultations from Palliative care specialists. This model is superior as it improves overall outcomes. It caters to patients with a higher risk of poor outcomes rather than all the cases in the ICU. Initially, the consultations may be for a specific group of patients, but after the benefits are shown the number of referrals will increase for other patients in ICU as well. Sometimes psychologists, social workers and spiritual workers can also be involved to provide holistic care. This model has a disadvantage in that patients and relatives may feel that there are too many physicians involved and there is no single point of contact for them. Also, ICU clinicians may not develop the interest to enhance their skills pertaining to palliative care if they feel that they already have specialists available; and (3) Mixed model - The primary physician manages basic palliative care problems themselves and consultation with a palliative care specialist is required if they feel that they are unable to resolve the problem. The need for consultation from a palliative care specialist is identified by the factors, *e.g.*, pre-existing functional dependence, age > 80 years, advanced malignancy, multi-organ dysfunction, severe traumatic brain injury and extreme prematurity in pediatric patients. This model incorporates advantages from both the integrative and consultation model (Table 1)[18,19].

Ethical issues in providing palliative care in ICU

End-of-life care discussions: These discussions are always a challenge for both caregivers and physicians in ICU. The acceptance takes time and the cycle of discussion often begins with denial, where a 'cafeteria approach' should be followed. Caregivers must be explained the advantages and disadvantages of aggressive ICU treatment. Caregivers must always be given an assurance that comfort and symptom management of their patients will always be ensured in all circumstances. If the patient has given advanced directive regarding what they would want for themselves if they are critically ill, then it becomes easy for both the physician and caregivers as it reduces the burden on family members to take that difficult decision[20,21]. However, in many countries, the concept of an advanced directive is still in a nascent phase. In Europe, end-of-life care discussions are being carried out by intensive care physicians rather than palliative care specialists[22].

Assessment of the decision capacity of the patient and caregivers: It is important to assess the decision capacity of patients which may be difficult sometimes in the critically ill because of their poor general condition, age, and cognitive and hearing impairment. In such cases, the decision capacity of caregivers should be assessed. But in many cases, there are many family members involved. Thus, it becomes imperative to identify who are the family members available and who among them will take a concrete decision for their patient.

The decision to withhold or withdraw the treatment: This is a very sensitive decision and discussions should be done along with family members and the primary physician before coming to any conclusion. The futility of any further treatment should be established, the consensus among all the decision makers should be reached and the process should be documented before withholding or withdrawing further active treatment measures.

Pain assessment in ICU patients

Pain is the fifth vital sign and is often overlooked in the hospital setting. Pain assessment and management in critically ill patients in ICU is an integral component of providing holistic palliative care [23,24]. Assessment of pain becomes even more difficult in patients who are intubated and unable to communicate. Thus, we must know about various assessment scales.

Scales to assess pain in patients who can communicate: Visual analog scale: The patient marks their pain level on a 10 cm line; Numeric rating scale: patients rate their pain level, zero means no pain and 10 means the worst possible pain they are bearing; Verbal rating scale: Patients can choose a word like mild, moderate and severe which describes their pain level intensity[25].

Scales to assess pain in patients who cannot communicate: Behavioral Pain Scale (BPS): it computes the pain based upon facial expressions, compliance with the mechanical ventilator and upper limb movements. Critical Care Pain Observation Tool (CPOP): Apart from three parameters involved in behavioural pain score, muscle tension should also be considered[26].

Table 1 Steps to choose an appropriate model to provide palliative care in critical care setup

Assess the capacity of staff, availability of resources and level of skills and knowledge among the clinicians
Assess the understanding of ICU clinicians regarding the need for palliative care in ICU and their receptivity to the same
Assess the interest level of ICU clinicians to strengthen their knowledge and skills related to palliative care
Form a multidisciplinary committee including a critical care specialist, palliative care physician, hospital administrator, nursing staff, psychologist and a social worker to decide upon the best model for providing palliative care in the ICU of their institute.
Try to use the 'mixed model' for providing palliative care in ICU as it incorporates advantages of both the integration and consultation model

ICU: Intensive care unit.

Palliative sedation in ICU

Another key component of palliative care is to provide palliative sedation to relieve the patient from unbearable symptoms at the end of life. This is done most commonly with the help of sedatives like opioids and benzodiazepines. The drugs chosen should be easily available and must have good efficacy with minimal side effects. Before initiating palliative sedation, one must ensure that alternative methods to provide relief were not effective or led to major side effects. Palliative sedation should not be considered the same as euthanasia, as it only intends to relieve a patient's suffering and not hasten the process of death[27]. It is based upon the principle of informed consent and autonomy[28].

Capacity building initiative of developing palliative care in ICU

Adding MD and Ph.D. programs in palliative medicine: Palliative care should be included in the academic curricula of all medical colleges. Increasing public awareness and organizing camps with help of non-governmental organizations: Developing national level framework policy for developing palliative care in ICU. Initiating the workshops in which trainers are trained themselves first, which will help in developing local expertise. Teleconsultation should be utilized to gain knowledge from experts. Keyholders from different areas - like ICU care physicians, hospital administrators and palliative care physicians should come together and form a team to implement palliative care in the ICU. Leaders from ICU, palliative care consultation service and hospital administration: conducting a needs assessment and evaluating the resources. There should be a sufficient number of trained personnel. Educational resources such as libraries should be available for physicians to strengthen their knowledge related to palliative care. Legal documents should be there for surrogate decision-making. An alternate place to provide care to the patient should be decided on who no longer needs ICU care. Developing an action plan: According to the availability of resources, goals of care to address the unmet need should be established. Targets should be set that are easy and plausible. Changes that are required in the system should be identified to achieve the set target. The documentation process should be valid. Regular audits should be conducted to evaluate the changes and progress made[29,30].

CONCLUSION

The role of palliative care in critically ill patients admitted to ICU is important and the principles of palliative care should be integrated at the earliest. Integration of palliative care in the ICU improves the overall quality of life and decreases the hospital and ICU stay without affecting the overall mortality. Ensuring a dignified end to life is an art that every physician should learn. ICU doctors should be given palliative care training and they must consult palliative care specialists when required. Training and education starting from the undergraduate level is the way to ensure that all patients who are admitted to ICU along with their caregivers get access to palliative care services.

FOOTNOTES

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REFERENCES

- 1 **Divatia JV**, Amin PR, Ramakrishnan N, Kapadia FN, Todi S, Sahu S, Govil D, Chawla R, Kulkarni AP, Samavedam S, Jani CK, Rungta N, Samaddar DP, Mehta S, Venkataraman R, Hegde A, Bande BD, Dhanuka S, Singh V, Tewari R, Zirpe K, Sathe P; INDICAPS Study Investigators. Intensive Care in India: The Indian Intensive Care Case Mix and Practice Patterns Study. *Indian J Crit Care Med* 2016; **20**: 216-225 [PMID: 27186054 DOI: 10.4103/0972-5229.180042]
- 2 **Needham DM**, Davidson J, Cohen H, Hopkins RO, Weinert C, Wunsch H, Zawistowski C, Bemis-Dougherty A, Berney SC, Bienvenu OJ, Brady SL, Brodsky MB, Denehy L, Elliott D, Flatley C, Harabin AL, Jones C, Louis D, Meltzer W, Muldoon SR, Palmer JB, Perme C, Robinson M, Schmidt DM, Scruth E, Spill GR, Storey CP, Render M, Votto J, Harvey MA. Improving long-term outcomes after discharge from intensive care unit: report from a stakeholders' conference. *Crit Care Med* 2012; **40**: 502-509 [PMID: 21946660 DOI: 10.1097/CCM.0b013e318232da75]
- 3 **IAHPC**. Global Consensus based palliative care definition. Houston, TX: The International Association for Hospice and Palliative Care. 2018. Available from: <https://hospicecare.com/what-we-do/projects/consensus-based-definition-of-palliative-care/definition/>
- 4 **Cox S**, Handy JM, Blay A. Palliative Care in the ICU. *J Intensive Care Soc* 2012; **13**: 320-326 [DOI: 10.1177/175114371201300411]
- 5 **Melville A**, Kolt G, Anderson D, Mitropoulos J, Pilcher D. Admission to Intensive Care for Palliative Care or Potential Organ Donation. *Crit Care Med* 2017; **45**
- 6 **Mosenthal AC**, Weissman DE, Curtis JR, Hays RM, Lustbader DR, Mulkerin C, Puntillo KA, Ray DE, Bassett R, Boss RD, Brasel KJ, Campbell M, Nelson JE. Integrating palliative care in the surgical and trauma intensive care unit: a report from the Improving Palliative Care in the Intensive Care Unit (IPAL-ICU) Project Advisory Board and the Center to Advance Palliative Care. *Crit Care Med* 2012; **40**: 1199-1206 [PMID: 22080644 DOI: 10.1097/CCM.0b013e31823bc8e7]
- 7 **Nelson JE**, Curtis JR, Mulkerin C, Campbell M, Lustbader DR, Mosenthal AC, Puntillo K, Ray DE, Bassett R, Boss RD, Brasel KJ, Frontera JA, Hays RM, Weissman DE; Improving Palliative Care in the ICU (IPAL-ICU) Project Advisory Board. Choosing and using screening criteria for palliative care consultation in the ICU: a report from the Improving Palliative Care in the ICU (IPAL-ICU) Advisory Board. *Crit Care Med* 2013; **41**: 2318-2327 [PMID: 23939349 DOI: 10.1097/CCM.0b013e31828cf12c]
- 8 **Cox CE**, Curtis JR. Using Technology to Create a More Humanistic Approach to Integrating Palliative Care into the Intensive Care Unit. *Am J Respir Crit Care Med* 2016; **193**: 242-250 [PMID: 26599829 DOI: 10.1164/rccm.201508-1628CP]
- 9 **Bradley CT**, Brasel KJ. Developing guidelines that identify patients who would benefit from palliative care services in the surgical intensive care unit. *Crit Care Med* 2009; **37**: 946-950 [PMID: 19237901 DOI: 10.1097/CCM.0b013e3181968f68]
- 10 **Hua MS**, Li G, Blinderman CD, 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 [PMID: 24261961 DOI: 10.1164/rccm.201307-1229OC]
- 11 **Adler K**, Schlieper D, Kindgen-Milles D, Meier S, Schwartz J, van Caster P, Schaefer MS, Neukirchen M. [Integration of palliative care into intensive care : Systematic review]. *Anaesthetist* 2017; **66**: 660-666 [PMID: 28589374 DOI: 10.1007/s00101-017-0326-0]
- 12 **Finkelstein EA**, Bhadelia A, Goh C, Baid D, Singh R, Bhatnagar S, Connor SR. Cross Country Comparison of Expert Assessments of the Quality of Death and Dying 2021. *J Pain Symptom Manage* 2022; **63**: e419-e429 [PMID: 34952169 DOI: 10.1016/j.jpainsymman.2021.12.015]
- 13 **Meier EA**, Gallegos JV, Thomas LP, Depp CA, Irwin SA, Jeste DV. Defining a Good Death (Successful Dying): Literature Review and a Call for Research and Public Dialogue. *Am J Geriatr Psychiatry* 2016; **24**: 261-271 [PMID: 26976293 DOI: 10.1016/j.jagp.2016.01.135]
- 14 **Cook D**, Rucker G. Dying with dignity in the intensive care unit. *N Engl J Med* 2014; **370**: 2506-2514 [PMID: 24963569 DOI: 10.1056/NEJMr1208795]
- 15 **Scheunemann LP**, McDevitt M, Carson SS, Hanson LC. Randomized, controlled trials of interventions to improve communication in intensive care: a systematic review. *Chest* 2011; **139**: 543-554 [PMID: 21106660 DOI: 10.1378/chest.10-0595]
- 16 **Kennedy R**, Abdullah N, Bhadra R, Bonsu NO, Fayeizadeh M, Ickes H. Barriers to Effective use of Palliative Care Services in the Acute Care Setting with Emphasis on Terminal Noncancer Diseases. *Indian J Palliat Care* 2019; **25**: 203-209 [PMID: 31114104 DOI: 10.4103/IJPC.IJPC_201_18]
- 17 **Hamdan Alshehri H**, Olausson S, Öhlén J, Wolf A. Factors influencing the integration of a palliative approach in intensive care units: a systematic mixed-methods review. *BMC Palliat Care* 2020; **19**: 113 [PMID: 32698809 DOI: 10.1186/s12904-020-00616-y]

- 18 **Mercadante S**, Gregoretti C, Cortegiani A. Palliative care in intensive care units: why, where, what, who, when, how. *BMC Anesthesiol* 2018; **18**: 106 [PMID: [30111299](#) DOI: [10.1186/s12871-018-0574-9](#)]
- 19 **Hua M**, Wunsch H. Integrating palliative care in the ICU. *Curr Opin Crit Care* 2014; **20**: 673-680 [PMID: [25233330](#) DOI: [10.1097/MCC.000000000000149](#)]
- 20 **Quill TE**, Holloway R. Time-limited trials near the end of life. *JAMA* 2011; **306**: 1483-1484 [PMID: [21972312](#) DOI: [10.1001/jama.2011.1413](#)]
- 21 **Chow GV**, Czarny MJ, Hughes MT, Carrese JA. CURVES: a mnemonic for determining medical decision-making capacity and providing emergency treatment in the acute setting. *Chest* 2010; **137**: 421-427 [PMID: [20133288](#) DOI: [10.1378/chest.09-1133](#)]
- 22 **Metaxa V**, Anagnostou D, Vlachos S, Arulkumaran N, van Dusseldorp I, Bensemmane S, Aslakson R, Davidson JE, Gerritsen R, Hartog C, Curtis R. Palliative care interventions in intensive care unit patients - a systematic review protocol. *Syst Rev* 2019; **8**: 148 [PMID: [31228954](#) DOI: [10.1186/s13643-019-1064-y](#)]
- 23 **Payen JF**, Bosson JL, Chanques G, Mantz J, Labarere J; DOLOREA Investigators. Pain assessment is associated with decreased duration of mechanical ventilation in the intensive care unit: a post Hoc analysis of the DOLOREA study. *Anesthesiology* 2009; **111**: 1308-1316 [PMID: [19934877](#) DOI: [10.1097/ALN.0b013e3181c0d4f0](#)]
- 24 **Devlin JW**, Skrobik Y, Gélinas C, Needham DM, Slooter AJC, Pandharipande PP, Watson PL, Weinhouse GL, Nunnally ME, Rochweg B, Balas MC, van den Boogaard M, Bosma KJ, Brummel NE, Chanques G, Denehy L, Drouot X, Fraser GL, Harris JE, Joffe AM, Kho ME, Kress JP, Lanphere JA, McKinley S, Neufeld KJ, Pisani MA, Payen JF, Pun BT, Puntillo KA, Riker RR, Robinson BRH, Shehabi Y, Szumita PM, Winkelman C, Centofanti JE, Price C, Nikayin S, Misak CJ, Flood PD, Kiedrowski K, Alhazzani W. Clinical Practice Guidelines for the Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU. *Crit Care Med* 2018; **46**: e825-e873 [PMID: [30113379](#) DOI: [10.1097/CCM.0000000000003299](#)]
- 25 **Karcioglu O**, Topacoglu H, Dikme O. A systematic review of the pain scales in adults: Which to use? *Am J Emerg Med* 2018; **36**: 707-714 [PMID: [29321111](#) DOI: [10.1016/j.ajem.2018.01.008](#)]
- 26 **Severgnini P**, Pelosi P, Contino E, Serafinelli E, Novario R, Chiaranda M. Accuracy of Critical Care Pain Observation Tool and Behavioral Pain Scale to assess pain in critically ill conscious and unconscious patients: prospective, observational study. *J Intensive Care* 2016; **4**: 68 [PMID: [27833752](#) DOI: [10.1186/s40560-016-0192-x](#)]
- 27 **Cherny NI**, Portenoy RK. Sedation in the management of refractory symptoms: guidelines for evaluation and treatment. *J Palliat Care* 1994; **10**: 31-38 [PMID: [8089815](#)]
- 28 **Boyle J**. Medical ethics and double effect: the case of terminal sedation. *Theor Med Bioeth* 2004; **25**: 51-60 [PMID: [15180095](#) DOI: [10.1023/b:meta.0000025096.25317.22](#)]
- 29 **Aslakson RA**, Curtis JR, Nelson JE. The changing role of palliative care in the ICU. *Crit Care Med* 2014; **42**: 2418-2428 [PMID: [25167087](#) DOI: [10.1097/CCM.0000000000000573](#)]
- 30 **Jazieh AR**. Capacity Building in Palliative Care. *J Palliative Care Med* 2013; **3**: 138 [DOI: [10.4172/2165-7386.1000138](#)]



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