Continuous Deep Sedation Until Death: Palliation or Physician-Assisted Death?
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Continuous Deep Sedation Until Death: Palliation or Physician-Assisted Death?

Mohamed Y. Rady, MD, PhD, FCCM,1,3 and Joseph L. Verheijde, PhD, MBA, PT2,3

Abstract
Published literature have not discerned end-of-life palliative versus life-shortening effects of pharmacologically maintaining continuous deep sedation until death (ie, dying in deep sleep) compared with common sedation practices relieving distress in the final conscious phase of dying. Continuous deep sedation predictably suppresses brainstem vital centers and shortens life. Continuous deep sedation remains controversial as palliation for existential suffering and in elective death requests by discontinuation of chronic ventilation or circulatory support with mechanical devices. Continuous deep sedation contravenes the double-effect principle because: (1) it induces permanent coma (intent of action) for the contingency relief of suffering and for social isolation (desired outcomes) and (2) because of its predictable and proportional life-shortening effect. Continuous deep sedation should be distinguished from common sedation practices for palliation and characterized instead as physician-assisted death.

Keywords
dying, end-of-life care, euthanasia, hydration, palliation, physician-assisted death, sedation

"I will not give a lethal drug to anyone if I am asked, nor will I advise such a plan." The Hippocratic Oath, 4th century bc.1

Background
The compassionate care of dying persons, who deserve a dignified and peaceful death, is the collective responsibility of society as a whole and of the medical profession in particular. The Hippocratic Oath behooves those in the medical profession to ensure competent care of terminally ill patients. However, multiple barriers that hinder the delivery of optimal end-of-life (EOL) care and palliation to terminally ill patients have been identified in the United States.2-4 These barriers include variations in the competency of physicians, institutional organization, and the health care delivery system.

Physicians do not always know enough about the preferences of their dying patients, including their values and goals of care, to be able to provide appropriate medical treatment before death.5 Setting unrealistic treatment goals that are consistent with a patient’s disease severity, preferences, and beliefs can delay or prevent appropriate EOL care. Misinterpreting patient-centered goals in the final stages of a terminal illness or an incurable disease can perpetuate empiric trials of nonbeneficial treatment or the use of a life-support system in the intensive care unit instead of exploring palliative care as an option.6 Intensive care unit services are being used by 1 in 5 Americans at the EOL.7 The notion of shared decision making for appropriate EOL care is negated by inadequate communication with dying patients or their families about the potentially harmful consequences of treatment trials using advanced medical technologies and life-support systems.8 The breakdown in shared decision making not only hinders optimal palliative care and the experience of a dignified death but it also results in distressing experiences for families, caregivers, and health care providers alike.9,10

Generally, institutional organization and coordination among different medical disciplines and specialties are essential components of good medical care. Coordinated and comprehensive interdisciplinary EOL care programs facilitate the timely referral of dying patients for quality palliation and good control of troubling symptoms before death.11 Interdisciplinary EOL and palliative care programs address the changing needs and symptoms along the trajectory of a terminal illness or end-stage disease.12 The quality of interdisciplinary EOL and palliative care programs, however, varies among US institutions.13 The availability

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of high-intensity resources, including medical specialties and intensive care services rather than disease characteristics or patient preferences, explains the variations in the quality of EOL care. Institutions with an abundance of high-intensity resources tend to favor the use of medical technology in EOL care versus palliative or hospice care during the last 2 years of life. In a health care system with fee-for-service payment for institutions, using high-intensity services and medical technology offers better financial incentives and reimbursements than does palliative or hospice care services.

Barriers to appropriate EOL care in the United States appear to have facilitated the emergence of a medical practice aimed at interventions that shorten life or that perhaps even accelerate the dying process (physician-assisted death) as an alternative to the provision of care. Physician-assisted death includes medical interventions intended to shorten life or accelerate the dying process with or without consent. In several states, the Death with Dignity Act has legalized physician-assisted death as an EOL option for dying patients. Oregon was the first state to pass in 1997, this act, making physician-assisted death a legitimate aspect of medical practice. A survey of Oregonians identified concern about the lack of supporting medical services for the appropriate management of pain or other physical symptoms that cause discomfort and poor quality of whatever life remains as the most common reasons someone might request elective physician-assisted death.

Medical Treatment Options in EOL Care

Three major categories of troubling symptoms can be identified in the dying process: physical, psychological, and existential (Table 1). Unrelieved physical pain is closely linked to psychological symptoms such as depression, anxiety, suicidal wishes, and existential distress in patients with advanced disease. Pain and other physical symptoms that occur at the EOL can usually be alleviated if clinicians have adequate training and resources to focus on this goal. Well-trained clinicians can provide pain relief for more than 90% of the dying patients with cancer they treat. However, overzealous and misguided attempts to cure rather than to palliate dying patients during the terminal stages of their illnesses can lead to poor pain control or, paradoxically, to a worsening of pain and related symptoms. As a consequence, not only do dying patients suffer unnecessarily but their families, caregivers, and nursing staff also inextricably experience intolerable distress. Perceived distress in any 1 of these 3 groups amplifies distress in the others. Perceived distress in dying patients increases anxiety, depression, and distress in family members. Likewise, ineffective palliation and pain control have been shown to generate moral distress among nursing staff.

Timely referral to palliative care can improve the dying patient’s quality of life and can ease the experience of dying, both for patients and for families coping with the subsequent grief. Failing to provide optimal palliation at an early stage also motivates dying patients and families to seek life-ending interventions to avoid uncertainty about possible intolerable suffering later on. Life-ending interventions include continuous deep sedation, self-dehydration, and starvation until death, euthanasia, and physician-assisted suicide (Table 2). Euthanasia refers to the intentional termination of life by hastening death at the explicit request of the patient. Physician-assisted suicide refers to intentionally helping a patient terminate his or her life, at the patient’s explicit request. Life-ending interventions become substitutes for other rational therapeutic, psychological, and social interventions that can control symptoms and enhance the quality of remaining life for dying patients and their families.

Table 1. Physical, Psychological, and Existential Symptoms at the End-of-Life

<table>
<thead>
<tr>
<th>Physical symptoms</th>
<th>Psychological symptoms</th>
<th>Existential symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Depression</td>
<td>Meaninglessness of present life</td>
</tr>
<tr>
<td>General: anorexia, cachexia, fatigue, weakness, insomnia</td>
<td>Anxiety</td>
<td>Meaninglessness of past life</td>
</tr>
<tr>
<td>Gastrointestinal: nausea, vomiting, constipation, diarrhea</td>
<td>Panic-stricken fear</td>
<td>Loss of social role functioning</td>
</tr>
<tr>
<td>Respiratory: breathlessness (dyspnea), cough, stridor</td>
<td>Delirium</td>
<td>Feeling emotionally irrelevant</td>
</tr>
<tr>
<td>Neurologic: myoclonus, seizure, motor hyperactivity, paralysis</td>
<td>Guilt</td>
<td>Loss of control over self-care or increased dependency on others</td>
</tr>
<tr>
<td>Skin: pressure ulcers, edema, pruritus</td>
<td>Grief</td>
<td>Burden on or nuisance to other family members or medical staff</td>
</tr>
<tr>
<td>Internal bleeding</td>
<td>Why me?</td>
<td>Hopelessness</td>
</tr>
<tr>
<td></td>
<td>Patients question why they should be suffering from the disease</td>
<td>Grief over imminent separation from loved ones</td>
</tr>
<tr>
<td></td>
<td>Guilt and considering disease or suffering to be the result of sin or punishment</td>
<td>Why me?</td>
</tr>
<tr>
<td></td>
<td>Unfinished business, goals not achieved, or unfulfilled aspirations</td>
<td>Why me?</td>
</tr>
<tr>
<td></td>
<td>Concerns about death itself or existence of life after death</td>
<td>Why me?</td>
</tr>
<tr>
<td></td>
<td>Faiths or beliefs: concerns related to a specific faith or religion</td>
<td>Why me?</td>
</tr>
<tr>
<td></td>
<td>Adhering to spiritual or religious beliefs</td>
<td>Why me?</td>
</tr>
<tr>
<td></td>
<td>Believing in things that give meaning to life</td>
<td>Why me?</td>
</tr>
<tr>
<td></td>
<td>Considering the importance of faith or belief in life</td>
<td>Why me?</td>
</tr>
<tr>
<td></td>
<td>Influence of spiritual or religious beliefs on behavior during this illness</td>
<td>Why me?</td>
</tr>
<tr>
<td></td>
<td>Being a part of a spiritual or religious community</td>
<td>Why me?</td>
</tr>
<tr>
<td></td>
<td>Support from a spiritual or religious community</td>
<td>Why me?</td>
</tr>
<tr>
<td></td>
<td>Ability of health care provider to address these issues in end-of-life care</td>
<td>Why me?</td>
</tr>
</tbody>
</table>

Adapted from sources.20,21
The aims of sedation therapy are to reduce distress, enable good consciousness, alert, but dying patient. In everyday clinical practice, sedation, that are used to provide temporary comfort in a context, and thus it differs from “normal sedating practices,” such as those used in the presence of refractory symptoms. However, the criteria of due care: the use of sedating medications, proportionality, the terminal nature of the patient’s illness, and the presence of refractory symptoms. Therefore, the criteria of due care are normative and, as such, should not be part of the definition of terminal sedation but instead should be formulated separately in EOL care guidelines. Incorporating normative elements into a definition ensures the obfuscation of moral discussions and raises the question of how best to distinguish cases in which the same acts are performed but in which other medications, indications, or patient circumstances are also involved.

Palliative sedation has been defined as a specific type of sedation that is continuous, deep, and sustained until death. This type of sedation has potentially life-shortening effects, and thus it differs from “normal sedating practices,” such as sedation, that are used to provide temporary comfort in a conscious, alert, but dying patient. In everyday clinical practice, the aims of sedation therapy are to reduce distress, enable good sleep at night, facilitate waking up for adequate communication at daytime, and, in the final phase of dying, avoid hastening death or allowing for “dying in deep sleep.” Continuous deep sedation is pharmaceutically induced and maintained until death or allowing for “dying in deep sleep.” Continuous deep sedation is considered an EOL intervention within the purview of physician-assisted death. Continuous deep sedation has been described as slow euthanasia. In fact, in The Netherlands, continuous deep sedation until death is increasingly being used as a relevant alternative to euthanasia for elective requests for death.

The prevalence of continuous deep sedation and its life-shortening effects on EOL care cannot be discerned because of the indiscriminate use of the terms palliative and terminal sedation in published clinical studies. It is therefore difficult to assess the comparability and quality of data on benefits, burdens, and outcomes of continuous deep sedation. The lack of robust scientific methods and the lack of evaluation of continuous deep sedation as an EOL intervention explain why many important ethical issues remain unresolved. Addressing these ethical issues will require additional research based on a uniform, single, unambiguous definition of continuous deep sedation, preferably in studies with a multicenter, prospective, longitudinal, and international design. Valid and reliable instruments need to be developed for measuring the clinical effects of continuous deep sedation in EOL care and should be included in such studies. Only then is it possible to establish a normative position on the desirability of or the limitations on the use of sedation interventions. When referring to palliative or terminal sedation at the EOL, we prefer to use continuous deep sedation because it is the most informative descriptive term.

**Pharmacological Mechanism for Palliative (Terminal) Sedation**

The depth of sedation and level of consciousness in a patient are determined by the person’s arousability and responsiveness to pain and sensory stimuli from the surrounding environment (Table 3). Consciousness is controlled by the brainstem reticular activating system and its pathways to both cerebral
hemispheres. The reticular activating system controls arousal, the awake-sleep cycle, and transmission of sensory stimuli to the cerebral cortex. A person in continuous deep sedation or coma (from the Greek word koma, meaning deep sleep) cannot be awakened, cannot perform voluntary motor activities such as drinking and eating, and cannot respond to pain or other sensory stimuli.

The brainstem reticular activating system is the target site for pharmacological induction of coma and deep sedation (Figure 1). Different classes of pharmaceutical agents or medications (eg, benzodiazepines, barbiturates, general anesthetic agents, propofol, ketamine) are administered parenterally (intravenous, subcutaneous, or intramuscular) to induce deep sedation; these are often combined with opioids, phenothiazines, or butyrophenones. When medication doses are adjusted for deep sedation, they simultaneously depress other vital functions in the brainstem, such as respiration, blood pressure, heart rate, and airway and swallowing reflexes. During deep sedation, these vital functions are depressed early and increase the risk of rapid dehydration and asphyxiation because of diminished control over face and throat muscles. The inability to swallow or cough can accelerate pharyngeal aspiration and precipitate the onset of fatal pulmonary complications. In terminal patients, rapid fluid dehydration can exacerbate restlessness, agitation, and delirium that mandate dosage escalation of sedative medications to maintain deep sedation. The rapid escalation of doses of sedative medications disproportionately depresses circulation and respiration in dehydrated and hypoxic patients. Therefore, continuous deep sedation sets in motion a series of predictable, self-perpetuating pathophysiologic events that are not only directly linked to the desired mechanism of action (ie, deep sedation) but also have direct life-shortening effects (Figure 2).

Table 3. Consciousness and Continuous Deep Sedation

<table>
<thead>
<tr>
<th>Alertness</th>
<th>Normal wakefulness with orientation to person, time, and place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confusion</td>
<td>Normal wakefulness and disorientation to person, time, or place; impaired thinking</td>
</tr>
<tr>
<td>Delirium</td>
<td>Mildly depressed consciousness and disorientation to person, time, or place; restlessness, hallucinations, sometimes delusions</td>
</tr>
<tr>
<td>Lethargy</td>
<td>Mildly depressed consciousness that can be aroused to wakefulness with little difficulty</td>
</tr>
<tr>
<td>Obtundation</td>
<td>Moderately depressed consciousness that cannot be fully aroused to wakefulness, with slowed psychomotor responses</td>
</tr>
<tr>
<td>Stupor</td>
<td>Severely depressed consciousness that cannot be aroused from a sleep-like state but still has occasional spontaneous motor activity or in response to sensory stimuli or pain</td>
</tr>
<tr>
<td>Coma</td>
<td>Severely depressed consciousness that cannot be aroused from sleep-like state and have no motor activity either spontaneously or in response to sensory stimuli or pain (continuous deep sedation)</td>
</tr>
</tbody>
</table>

Figure 1. Pharmacological mechanism of coma by continuous deep sedation. Sedative medications or general anesthesia agents used for inducing coma and continuous deep sedation have pharmacological actions on the brainstem reticular activating system. There is no proportionality or selectivity in the doses of pharmacological agents used for continuous deep sedation (good effect) without simultaneously suppressing other vital centers located in the brainstem that control respiration, blood pressure, heart rate and airway, and pharyngeal muscles for swallowing and cough (bad effect). The combined actions have potentially life-shortening effects and accelerate the dying process. For continuous deep sedation to fulfill the double-effect principle, there must be proportionality, in that the good effect must exceed or balance the bad effect.
Studies on the use of continuous deep sedation until death have documented increases in the doses of sedative medications in the last hours of life to control worsening agitation and restlessness. In one study, the dose of sedative drugs tended to increase during the last week of life to maintain continuous deep sedation. Nonetheless, the researchers refuted the likelihood that this intervention contributed to the shortening of overall survival in the terminally ill. For continuous deep sedation, the median dose of midazolam hydrochloride was increased from 10 mg/24 hours on the penultimate day of life to 23 mg/24 hours on the last day. Large increases in doses of sedative medications such as midazolam hydrochloride (50 mg/24 hours), propofol infusion (550 mg/hours), or phenobarbital (1200 mg/24 hours) may be required to control breakthrough restlessness and agitation. These breakthroughs are probably related to the metabolic consequences of dehydration and hypoxia. Rapidly escalating the doses of sedative medications to control breakthrough restlessness and agitation during deep continuous sedation is likely to precipitate fatal respiratory or circulatory depression and life-shortening effects in dehydrated and hypoxic patients. In 102 consecutive adult patients with cancer who had continuous deep sedation induced rapidly over 4 hours, respiratory or circulatory depression (respiratory rate \( \leq 8/\text{min} \); systolic blood pressure \( \leq 60 \text{ mm Hg} \) or 50% or more reduction) occurred in 20%, with fatal outcomes in 4%. Other authors have reported that more than half of their patients who underwent continuous deep sedation died in 19 to 22 hours. The real life-shortening effect of continuous deep sedation has been estimated at 24 hours or less in more than 40% of cases and at longer than 7 days in 27% of cases.

The magnitude of life-shortening effect does not always correlate with specific doses of medications given to induce and maintain continuous deep sedation. The life-shortening effect of a particular dose of a given medication depends on pharmacokinetics and pharmacodynamics in each patient, which also can change during the final stages of life. However, medications administered in sufficient doses to induce deep sedation or coma can directly depress brainstem vital functions and accelerate the dying process to occur within minutes. Medications administered in sufficient doses to relieve physical symptoms such as pain without inducing deep sedation do not depress brainstem vital functions and do not have life-shortening effects.

### Indications for Palliative (Terminal) Sedation

Palliative or terminal sedation is considered an EOL care option for dying patients. Early advocates have emphasized the fundamental ethical importance of prognosis based on the
underlying illness, proximity to the final stage of dying, and informed decision making before embarking on continuous deep sedation until death. However, the indications for continuous deep sedation have broadened beyond the management of physical symptoms to include anticipated physical or non-physical symptoms and any present or expected psychological, social, and existential suffering during the last stages of life. Continuous deep sedation is commonly used in patients who electively request death and wish to discontinue chronic mechanical ventilation or deactivate mechanical circulatory support such as a ventricular assist device or total artificial heart. Patients on chronic mechanical support of respiration or circulation cannot, by definition, have a natural death. They may opt for an elective request for death because of fear about future suffering or dependency, feeling that suffering is pointless, tiredness with living, loss of dignity, wishing to die with dignity, wanting to determine their time of death, wanting to avoid being an economic burden on others, concerns about family fatigue, or intolerable psychological or social suffering for themselves or their families. These reasons are similar to those of patients requesting euthanasia or assisted suicide in the Netherlands.

Continuous deep sedation is also recommended before discontinuation of mechanical ventilation in EOL care guidelines in US intensive care units. There has been a gradual shift in broadening the use of continuous deep sedation for the management of anticipated psychological or existential distress and in circumstances lacking refractory physical symptoms. In these situations, the depression of respiratory and cardiovascular functions can shorten the dying process after mechanical ventilation is discontinued. Premedication to induce continuous deep sedation or coma before discontinuing mechanical ventilation can shorten life to less than 60 minutes. When the time frame for the dying process is accelerated to minutes after the discontinuation of mechanical ventilation, it is difficult to discern a correlation or causality between medication dose and time to death.

The irony of incorporating continuous deep sedation into the practice of palliation is that 96% of terminally ill patients and 65% of treating physicians in the United States consider mental alertness an important attribute at the EOL. Mental alertness and social interaction of dying patients with families and caregivers are considered important aspects of EOL care. In continuous deep sedation, the permanent removal of consciousness is a curtailment of personal freedom and constitutes the closing, or the concluding, of the patient’s social life. The patients are no longer able to make autonomous choices or experience the world around them, nor do they have any contact with their family. The patient’s life is purely biological; they are alive, but have no social life “...ie, they are socially dead.”

Palliative sedation for psychological suffering and existential distress has been ethically justified by allowing the initiation of this intervention at a specific time point along the trajectory of an acute terminal illness or chronic incurable disease (Figure 3). It has been argued that proximity to death can be a more useful concept than terminality of illness or disease in weighing the benefits and burdens of continuous deep sedation. When the death of a patient is imminent or unavoidable within 2 weeks, continuous deep sedation is justified to relieve suffering associated with acute existential distress. If life-sustaining treatment is withdrawn or withheld in such cases, continuous deep sedation is justified to relieve suffering associated with subacute existential distress. Patients who are likely to survive more than 2 weeks irrespective of treatment are referred to as experiencing chronic existential distress. It can be argued that most clinicians are unlikely to be able to predict with sufficient accuracy the future exact time of a person’s natural death or survival of 2 weeks or less. If survival time is erroneously predicted to be less than 2 weeks, continuous deep sedation can shorten life by days to years.

Continuous deep sedation has been recommended as an EOL intervention only when a patient suffers an incurable chronic disease and has refractory or burdensome physical symptoms in the final stages of life. Guidelines have also been recommended for its use to alleviate existential suffering or distress: (1) all palliative treatment must have been exhausted, including treatment for depression, delirium, anxiety, and any other contributing maladies; (2) a psychological assessment by a skilled clinician should be completed; (3) an assessment for spiritual issues by a skilled clinician or clergy member should be completed; (4) discussion should be initiated about the benefits and burdens of nutritional support and hydration therapy in view of impending continuous deep sedation...
sedation; and (5) informed consent should be obtained from the patient or surrogate decision maker. An initial trial of temporary or respite sedation is advisable if the patient and the family are uncertain about the desirability of continuous deep sedation until death. Because sedative medications are administered continuously or intermittently, they should be started at the lowest possible adequate dosage to control symptoms and vital signs should be carefully monitored. The dose of sedative medications should be reduced when breathing becomes agonal and the medication becomes the proximate cause of death.

### Palliative (Terminal) Sedation and the Double-Effect Principle

Palliative sedation raises serious ethical concerns about the criteria and nature of anticipated, intolerable, or refractory symptoms for its use, the guidelines for medical decision making, and the goals and intent in EOL care. Palliative sedation applied for various reasons (refractory physical symptoms at near-death vs psychic distress from chronic illness) generates different ethical implications. The double-effect principle is invoked, allowing patients and treating clinicians alike to maintain an ethical equilibrium in difficult EOL situations. This ethical equilibrium lessens the moral reservations of clinicians and family members, allowing them to undertake certain actions on behalf of dying patients and helping them to circumvent or alleviate subsequent guilt and its morbid psychological sequellae.

Analytic examination of continuous deep sedation raises the serious question of whether this EOL intervention adheres to the double-effect principle (Table 4). The double-effect principle is predicated on the axioms that (1) intent is a critical ethical concern, and (2) the distinction between foreseeing and intending an unavoidable maleficent outcome is ethically significant. Because continuous deep sedation may arguably make the detection of euthanasia or assisted suicide more difficult, the intent of the physician is the most crucial distinction. Clinical intentions may sometimes be more complex and ambiguous when continuous deep sedation is based on subjective and broad interpretations of the intended outcomes of relief of suffering or death with dignity.

Cherny and Portenoy have defended the distinction between foreseeing and intending an unavoidable maleficent outcome for ethical validity of continuous deep sedation. They counterbalance the compelling primary therapeutic intent (to relieve suffering) against the unavoidable untoward consequences (active life-shortening or accelerating death) with the following 4 arguments: (1) continuous deep sedation is at least neutral (if not beneficial) but may have untoward as well as beneficial consequences; (2) the clinician intends the beneficial outcome (relief of suffering), but the foreseen untoward outcome (shortened survival) may be unavoidable; (3) the untoward outcome is not necessary to achieve the desired beneficial outcome (relief of suffering); and (4) adequate relief of unendurable symptoms is an appropriately compelling reason to place the patient at risk of such an untoward outcome. The first argument does not hold if medication is titrated for inducing coma and continuous deep sedation by escalating cumulative doses that primarily depress fluid intake, respiration, and circulation (Figure 2). It can be argued that, for patients close to death who have already stopped eating and

### Table 4. Continuous Deep Sedation Until Death and the Double-Effect Principle

<table>
<thead>
<tr>
<th>Rational</th>
<th>Purpose</th>
<th>Dilemma</th>
</tr>
</thead>
<tbody>
<tr>
<td>The nature of the act must be good or morally neutral and not intrinsically wrong</td>
<td>The act is to administer sedative medications for continuous deep sedation until death</td>
<td>Is pharmacological induction of coma (continuous deep sedation) good, morally neutral, or not intrinsically wrong?</td>
</tr>
<tr>
<td>The intent of the clinician must be good, with the good effect and not the bad effect intended, although the bad effect can be foreseen and permitted</td>
<td>Intent to relieve suffering (good). Coma by continuous deep sedation (good effect) simultaneously suppresses brainstem vital functions (bad effect)</td>
<td>Is consciousness or alertness a symptom of suffering? Is coma by continuous deep sedation for relief of suffering (good effect) achieved before or without suppression of brainstem vital functions (bad effect)?</td>
</tr>
<tr>
<td>The bad effect must not be the means to the good effect</td>
<td>Pharmacological suppression of the brainstem reticular activating system for inducing continuous deep sedation or coma (good effect) also simultaneously depresses the brainstem vital functions that control airways, swallowing, fluid intake, respiration, and circulation</td>
<td>Does the pharmacological depression of vital functions, airway reflexes, fluid intake, etc, have life-shortening effects?</td>
</tr>
<tr>
<td>There must be proportionality, in that the good effect must exceed or balance the bad effect</td>
<td>Metabolic consequences (rapid dehydration, poor airway control, hypoxia) of continuous deep sedation can worsen restlessness and agitation, requiring escalation of sedative medication doses to maintain deep sedation. Dehydration and hypoxia disproportionately augments higher doses of sedative medications, which depresses respiration and circulation (life-shortening effect)</td>
<td>Is there a proportionality of doses of sedative medications for continuous deep sedation (good effect) without depression of fluid intake, airway reflex, respiration, and circulation (bad effect) once dehydration ensues?</td>
</tr>
</tbody>
</table>
drinking, continuous deep sedation may not be hastening death through dehydration or starvation; however, this is not the case for patients who stop eating and drinking after induction of deep sedation. Therefore, continuous deep sedation is not a neutral act but rather a harmful act if benefit does not accrue to it. Continuous deep sedation is associated with intentional dehydration and starvation. The third argument contradicts the pharmacological mechanism of continuous deep sedation interfering with vital centers in the brainstem and triggering pathophysiologic events that primarily and inevitably shorten survival or accelerate the dying phase of an illness. The fourth argument about the use of medication for relief of unendurable symptoms (consciousness that allows social interaction, psychosocial concerns, or existential distress) is applicable for euthanasia in the geographic areas where its practice has been legalized in medicine. The pharmacological induction of permanent unconsciousness has been argued to turn the patient into “a living dead,” that the patient is living in terms of continued basic vital functions but dead as a person who is incapable of social interaction.

Attitudes of Health Care Providers to Palliative (Terminal) Sedation

Complex medical, ethical, and emotionally stressful situations have arisen for health care providers because of the use of palliative sedation in dying patients. In many cases, the ethical and legal boundaries are often blurred that separate the practice of euthanasia from the practice of palliative sedation. For example, many nurses believe not only that palliative sedation may accelerate death but also that its life-shortening effect is justifiable in certain situations for the relief of physical symptoms. Some nurses believe that palliative sedation is close to the practice of euthanasia, particularly when applied for nonphysical suffering or in compliance with the patient’s or family’s elective request for death.

The broad variations in our understanding of what palliative sedation entails influence the ethical attitudes of medical professionals toward its practice in EOL care. Our moral evaluation of palliative sedation is closely intertwined with its definition in terms of its duration and proximity to death, its life-shortening effects, and the medical indication for its use in dying patients. In EOL care, medical professionals view as morally challenging the continuous deep sedation with intentional elimination of consciousness until the patient’s death: (1) when the dying process has not yet started and (2) for the relief of untreated mental symptoms or anticipated symptoms before withdrawal of life-support measures. Medical professionals view light or intermittent forms of sedation—as in normal sedation practice—for treatment-refractory physical symptoms as ethically acceptable EOL care. In fact, physicians who are competent in caring for the dying are more likely to oppose any step toward EOL practices that is intended to shorten life and facilitate assisted death. Physicians with either a limited clinical experience in caring for the dying or a high level of professional burnout are more likely to recommend EOL practices intended to shorten life and facilitate assisted death. In addition to the experience of caring for dying patients, the religious beliefs and values of physicians can play an important role in whether they recommend or participate in morally contested life-ending interventions such as continuous deep sedation.

Conclusions

Numerous barriers hinder the delivery of optimal palliation and compassionate EOL care to dying patients in the United States. The failure of the health care profession to overcome these multiple barriers has facilitated the emergence of active life-shortening interventions and physician-assisted death in EOL care. Continuous deep sedation until death, dehydration, starvation, euthanasia, and physician-assisted suicide are options to facilitate physician-assisted death. The variable definition and nomenclature in published reports of studies that contrast continuous deep sedation until death (ie, dying in deep sleep) with the common practice of sedation therapy (ie, to relieve anxiety or distress) during the dying process (without dying in deep sleep) poses multiple challenges. Pharmacological suppression of the brainstem reticular activating system induces deep sedation or coma while simultaneously depressing other adjacent vital centers that control respiration, blood pressure, heart rate, and airway and swallowing reflexes. Continuous deep sedation sets in motion-predictable self-perpetuating pathophysiological events that are directly linked with the induced coma and its life-shortening effect. The indications for continuous deep sedation have been broadened beyond the management of physical symptoms to include anticipated physical or psychosocial symptoms and any present or expected existential suffering during these last stages of life. Continuous deep sedation is commonly used when patients electively request death by the discontinuation of artificial life-support. It raises serious questions about the adherence of EOL intervention to the double-effect principle. Medical professionals continue to question whether inducing a permanent coma is a prerequisite for the relief of suffering and what the proportionality should be between the duration of continuous deep sedation and its life-shortening effect. Current evidence suggests that continuous deep sedation until death as an EOL intervention should be viewed as physician-assisted death that is different from the normal sedation practices used for palliation. Addressing the ethical questions will require additional research based on a uniform, single, unambiguous definition of continuous deep sedation until death. Post acceptance addendum: The Montana Supreme Court has not released its final decision in Baxter vs Montana, whether, as a lower court judge held, the Montana Constitution protects the right of a terminally ill patient to physician-assisted suicide (death).

Declaration of Conflicting Interest

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