ARTICLE

Physician Reports of Terminal Sedation without Hydration or Nutrition for Patients Nearing Death in the Netherlands

Judith A.C. Rietjens, MSc; Agnes van der Heide, MD, PhD; Astrid M. Vrakking, MSc; Bregje D. Onwuteaka-Philipsen, PhD; Paul J. van der Maas, MD, PhD; and Gerrit van der Wal, MD, PhD

Background: Terminal sedation in patients nearing death is an important issue related to end-of-life care.

Objective: To describe the practice of terminal sedation in the Netherlands.

Design: Face-to-face interviews.

Setting: The Netherlands.

Participants: Nationwide stratified sample of 482 physicians; 410 responded and 211 of these reported characteristics of their most recent terminal sedation case.

Measurements: Physician reports of frequency of terminal sedation (defined as the administration of drugs to keep the patient in deep sedation or coma until death, without giving artificial nutrition or hydration), characteristics of the decision-making process, drugs used, the estimated life-shortening effect, and frequency of euthanasia discussions.

Results: Of respondents, 52% (95% CI, 48% to 57%) had ever used terminal sedation. Of the 211 most recent cases, physicians used terminal sedation to alleviate severe pain in 51% of patients (CI, 44% to 58%), agitation in 38% (CI, 32% to 45%), and dyspnea in 38% (CI, 32% to 45%). Physicians reported discussing with patients the decision to use deep sedation in 59% of the 211 most recent cases (CI, 52% to 66%) and the decision to forgo artificial nutrition or hydration in 34% (CI, 28% to 41%). Hastening death was partly the intention of the physician in 47% (CI, 41% to 54%) of cases and the explicit intention in 17% (CI, 13% to 22%) of cases.

Limitations: The generalizability of physician reports about their most recent cases to all terminal sedation cases is uncertain. In addition, the findings are subject to recall bias and may not apply to other geographic settings.

Conclusions: Terminal sedation precedes a substantial number of deaths in the Netherlands. In about two thirds of most recently reported cases, physicians indicated that in addition to alleviating symptoms, they intended to hasten death.

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For author affiliations, see end of text.

See editorial comment on pp 236-237.

Patients nearing death frequently have symptoms such as dyspnea, agitation, pain, and anxiety (1, 2). One of the most important goals of the medical care provided to these patients is the alleviation of these symptoms (3). If treatment with analgesic or anxiolytic agents is not effective, sedatives are sometimes used as an alternative to render patients unconscious and then oblivious to their symptoms (4, 5). Subsequently, if artificial nutrition and hydration are not given, death will follow soon.

The ethical debate about this practice focuses on the extent to which it should be considered an end-of-life decision that possibly or certainly hastens death. Previous studies have explored the differences and similarities with other end-of-life decisions, such as euthanasia and physician-assisted suicide (6–19). However, little information exists on the medical practice of deep sedation with the forgoing of artificial nutrition or hydration in patients nearing death. Estimates about the frequency of deep sedation at the end of life vary from 15% to more than 60%, depending on the settings studied and the definitions used (4, 5, 20–26). The terminology used reflects these differences in definition of the practice of deep sedation at the end of life. Although "terminal sedation" is the most commonly used term, other frequently used terms, which demonstrate the different perspectives from which this practice is viewed, are "sedation for intractable distress in the imminently dying," "palliative sedation therapy," "slow euthanasia," "opioid coma," or "anesthetic coma" (6, 27–30).

The present study describes the practice of terminal sedation in the Netherlands. This study was part of the evaluation of the notification procedure for physician-assisted death in the Netherlands, which was commissioned by the ministers of Health and Justice (31).

Methods

Respondent Characteristics

We interviewed a nationwide sample of 410 physicians: 208 clinical specialists, 125 general practitioners, and 77 nursing home physicians. In the Netherlands, clinical specialists provide hospital care, general practitioners provide nonspecialized care outside the hospital, and nursing home physicians work in long-term care institutions mainly for elderly people. The proportions of deaths in these health care settings are approximately 35%, 42%, and 23%, respectively. The specialties involved in our study covered about 95% of all deaths in the Netherlands in 2001. The respondents were selected according to the following criteria: They were required to be in active practice at the time of the interview and to have actively practiced medicine within the registered specialty for the past 2 years in the same setting. All addresses were taken from the professional registries of the relevant specialties. To arrive

at the desired number of 410 physicians, we sampled 482 physicians. Seventy-two physicians (15%) declined to take part in the study: 17% of clinical specialists, 18% of general practitioners, and 3% of nursing home physicians. Nonresponders did not differ in age from responders.

Face-to-face interviews were conducted by experienced part-time working or recently retired physicians who were trained to administer the structured questionnaires. All interviews took place between March 2002 and October 2002. We applied strict rules to ensure the anonymity of all physicians and patients studied.

Interview Process

The interview schedule addressed experiences with end-of-life decision making (**Appendix Figure** [Questionnaire on Terminal Sedation], available at www.annals.org). Terminal sedation was defined as the administration of drugs to keep the patient in deep sedation or coma until death, without giving artificial nutrition or hydration. The respondents were first asked whether they had ever used terminal sedation and, subsequently, how often they had performed this practice in 2000 and 2001. Additional questions about the practice of terminal sedation concerned the physician's most recent patient to have received terminal sedation (n = 211). The physicians were asked about the patient's characteristics; whether or not sedation or the forgoing of artificial nutrition or hydration had been discussed with the patient, family, or other health care professionals; the drugs used; the intention of the physician; the estimated life-shortening effect; and whether euthanasia was discussed during the decision process.

Statistical Analysis

We calculated all estimates about the occurrence of terminal sedation in the Netherlands by weighting the estimates of individual physicians. Weighting factors were based on differences in sampling fractions and response rates for the different specialties. These sampling fractions were 125 of 7027 for general practitioners, 77 of 810 for nursing home physicians, 34 of 394 for cardiologists, 34 of 545 for neurologists, 69 of 1321 for specialists in internal medicine, 35 of 325 for pulmonologists, and 36 of 769 for surgeons. The probabilities used to determine sampling weights were 1 in 56 for general practitioners, 1 in 11 for nursing home physicians, 1 in 12 for cardiologists, 1 in 16 for neurologists, 1 in 19 for specialists in internal medicine, 1 in 9 for pulmonologists, and 1 in 21 for surgeons.

Data on the 211 most recent patients seen by physicians were not weighted. All analyses were done by using SPSS software, version 10.0 (SPSS, Inc., Chicago, Illinois).

Role of the Funding Sources

The sponsors approved the study design but were not involved in the collection, analysis, or interpretation of the data or in the decision to submit the manuscript for publication.

Context

Terminal sedation, the administration of sedating medications with cessation of nutrition and hydration, is an option for care of patients who are nearing death. However, little is known about physician's experience with terminal sedation.

Contribution

Of more than 400 physicians in the Netherlands who completed a survey about end-of-life care, just over half had ever used terminal sedation. Common reasons for using terminal sedation were relief of pain, agitation, or dyspnea. Hastening death was the primary intention in only 17% of reported cases.

Caution

Because attitudes and practices regarding terminal sedation vary geographically and culturally, it is unclear whether these results are generalizable outside of the Netherlands.

–The Editors

RESULTS

Most of the 410 physicians interviewed (76%) were men; 51% were clinical specialists, 30% were general practitioners, and 19% were nursing home physicians (Tables 1 and 2). Of all physicians, a weighted percentage of 52% (95% CI, 48% to 57%) had ever practiced terminal sedation. This percentage was 55% (CI, 49% to 62%) for clinical specialists, 48% (CI, 39% to 57%) for general practitioners, and 75% (CI, 64% to 83%) for nursing home physicians. We asked all interviewed physicians to estimate the total number of times they performed terminal sedation in 2000 and 2001. These numbers were extrapolated to the total number of 140 377 deaths in 2001 by multiplying them with the weighting factor for each specialty and assuming that the numbers were similar for the 5% of deaths covered by hospital doctors from specialties other than the ones included in our study. This extrap-

Table 1. **Characteristics of Interviewed Physicians**

Variable	Physicians (n = 410), %
Sex	
Male	76
Female	24
Age	
30–44 y	35
45–54 y	45
≥55 y	20
Specialty	
Clinical specialist	51
General practitioner	30
Nursing home physician	19

Table 2. **Proportion of Deaths per Specialty***

Specialty	Deaths (n = 140 377), %
Clinical specialist	35
General practitioner	42
Nursing home physician	23

* From Statistics Netherlands; Central Death Registry 2001 (32).

olation suggests that physicians used terminal sedation in 10.0% (CI, 9.1% to 10.8%) of all deaths in that year. Of the 10.0% of deaths preceded by terminal sedation, 5.5% (CI, 5.0% to 6.1%) were attended by clinical specialists, 2.5% (CI, 1.9% to 3.2%) by general practitioners, and 2.0% (CI, 1.7% to 2.2%) by nursing home physicians.

Of all physicians who had ever used terminal sedation, 211 provided information about their most recent cases of terminal sedation (103 clinical specialists, 53 general practitioners, and 55 nursing home physicians). Of these most recent cases, 78% (CI, 72% to 83%) involved patients 65 years of age or older and 54% (CI, 47% to 60%) involved patients who had cancer (Table 3). Clinical specialists and nursing home physicians also frequently reported practicing terminal sedation in patients with cardiovascular diseases. The most frequently mentioned reasons for using terminal sedation were the alleviation of pain (51% [CI, 44% to 58%]), agitation (38% [CI, 32% to 45%]), dyspnea (38% [CI, 32% to 45%]), and anxiety (11% [CI, 8% to 16%]).

In 59% (CI, 52% to 66%) of the most recent cases seen by physicians, the physician had discussed the sedation with the patient (Table 4); in 33% (CI, 27% to 39%) of the cases, the patient had requested deep sedation. The main reasons for not discussing deep sedation with the patient were the fact that the patient was incompetent or subcomatose (25% [CI, 20% to 31%]). The decision to forgo artificial nutrition or hydration was discussed less frequently with the patient; the respondents reported discussing this topic in 34% (CI, 28% to 41%) of their most recent cases and receiving a request from the patient to forgo artificial nutrition or hydration in 9% (CI, 6% to 13%). Next to patient incompetence (37% [CI, 31% to 44%]), another frequently mentioned reason for not discussing the decision to forgo artificial nutrition or hydration was that many physicians perceived this not as optional but rather as a given; they considered terminal sedation to preclude the concomitant use of artificial nutrition and hydration (23% [CI, 18% to 29%]) (data not shown).

The decision to use sedation was discussed with relatives of the patient in 93% (CI, 89% to 96%) of the most recent cases seen by physicians, and the decision to forgo artificial nutrition or hydration was discussed with relatives in 73% (CI, 67% to 79%) of the most recent cases. The physicians had discussed the sedation with other caregivers in 79% (CI, 73% to 84%) of cases and had discussed forgoing artificial nutrition or hydration in 67% (CI, 60% to 73%) of cases. Clinical specialists, nursing home physicians, and general practitioners discussed the sedation with other physicians in 76% (CI, 67% to 83%), 38% (CI, 26% to 52%), and 29% (CI, 18% to 42%) of their most recent cases, respectively. Nurses were often involved in the decision making by clinical specialists and nursing home physicians. Specialists in palliative care from other institutions were rarely consulted. In 17% (CI, 12% to 22%) of the physicians' most recent cases, neither the sedation nor the forgoing of artificial nutrition or hydration was discussed with other caregivers, and in 1% (CI, 0% to 4%) of the cases, these decisions were not discussed with the patient, the relatives, or other caregivers (data not shown).

Most physicians recalled having administered benzodiazepines in their most recent cases of terminal sedation. Twenty-one percent (CI, 16% to 27%) of physicians used only these drugs; 35% (CI, 29% to 42%) combined benzodiazepines with morphine, and 4% (CI, 2% to 8%) combined benzodiazepines with another drug (Table 5). In the remaining cases, physicians mostly used morphine. No physicians used barbiturates. General practitioners and nursing home physicians reported using benzodiazepines relatively frequently, which is in contrast to the clinical specialists, who were more likely to administer morphine only.

Of all physicians, 36% (CI, 29% to 42%) reported having made their most recent decision to perform terminal sedation without the intention of hastening death. The

Table 3. **Characteristics of the Sample Consisting of Each Physician's Most Recent Case of Terminal Sedation***

Variable	Sample Consisting of Physician's Most Recent Case (n = 211), n (%)	All Deaths in the Netherlands in 2001, %
Sex		
Male	99 (47)	49
Female	112 (53)	51
Age†		
0–64 y	46 (22)	20
65–79 y	88 (42)	35
≥80 y	76 (36)	46
Main diagnosis		
Cancer	113 (54)	27
Cardiovascular diseases	51 (24)	25
Pulmonary diseases	14 (7)	10
Nervous system diseases	17 (8)	11
Other	16 (8)	27
Reason for deep sedation‡		
Pain	108 (51)	NA
Agitation	80 (38)	NA
Dyspnea	80 (38)	NA
Anxiety	24 (11)	NA
Other	62 (29)	NA

* NA = not available.
† In 1 case, information on age was missing.
‡ One or more answers are possible.

Table 4. **Discussion about Deep Sedation and Forgoing Artificial Nutrition or Hydration in Each Physician's Most Recent Case of Terminal Sedation, by Physician Specialty**

Topic of Discussion	Cases Seen by Clinical Specialists (n = 103), n (%)	Cases Seen by General Practitioners (n = 53), n (%)	Cases Seen by Nursing Home Physicians (n = 55), n (%)	Cases Seen by All Physicians (n = 211), n (%)
Deep sedation				
Discussed with patient	67 (65)	28 (53)	30 (55)	125 (59)
Requested by patient	36 (35)	19 (36)	14 (25)	69 (33)
Reason for not discussing*				
Patient was incompetent or subcomatose	27 (26)	13 (25)	13 (24)	53 (25)
Deep sedation was clearly in the best interest of the patient	4 (4)	4 (8)	6 (11)	14 (7)
Patient had dementia	2 (2)	1 (2)	12 (22)	15 (7)
Discussion would have done more harm than good	0 (0)	1 (2)	1 (2)	2 (1)
Other reason	5 (5)	5 (9)	3 (5)	13 (6)
Discussed with relatives†	94 (91)	48 (92)	53 (96)	195 (93)
Discussed with other caregivers*†	91 (88)	30 (57)	46 (84)	167 (79)
Another physician	78 (76)	15 (29)	21 (38)	114 (54)
Nurses	70 (68)	14 (27)	41 (75)	125 (60)
Specialists in palliative care from other institutions	3 (3)	5 (10)	0 (0)	8 (4)
Multidisciplinary pain management team	8 (8)	2 (4)	0 (0)	10 (5)
Other	4 (4)	6 (12)	4 (7)	14 (7)
Forgoing artificial nutrition or hydration				
Discussed with patient‡	33 (33)	14 (27)	23 (43)	70 (34)
Requested by patient‡	9 (9)	3 (6)	6 (11)	18 (9)
Discussed with relatives‡	68 (67)	34 (65)	49 (91)	151 (73)
Discussed with other caregivers*§	76 (75)	20 (38)	43 (80)	139 (67)
Another physician	58 (57)	10 (19)	14 (26)	82 (39)
Nurses	60 (59)	11 (21)	41 (76)	112 (54)
Specialists in palliative care from other institutions	3 (3)	1 (2)	0 (0)	4 (2)
Multidisciplinary pain management team	4 (4)	1 (2)	0 (0)	5 (2)
Other	1 (1)	4 (8)	4 (7)	9 (4)

* One or more answers are possible.
† In 1 case, information was missing.
‡ In 4 cases, information was missing.
§ In 3 cases, information was missing.

physicians partly had the intention to hasten death in 47% (CI, 41% to 54%) of cases and had the explicit intention to hasten death in 17% (CI, 13% to 22%) of cases. This explicit intention involved only the sedation in 2% (CI, 1% to 5%) of the physicians' most recent cases, only the forgoing of artificial nutrition or hydration in 14% (CI, 10% to 19%) of cases, and both sedation and the forgoing of artificial nutrition or hydration in 1% (CI, 0% to 4%) of cases.

Of the physicians reporting a recent case, 40% (CI, 34% to 45%) estimated that the patient's life had been shortened by 24 hours or less. In 27% (CI, 21% to 33%) of the cases, life was estimated to have been shortened by more than 1 week.

Thirty-seven percent (CI, 30% to 43%) of physicians discussed the option of euthanasia with the patient during the decision-making process. The main reasons for deciding against euthanasia were as follows: The patient preferred terminal sedation (9% [CI, 5% to 14%]); the patient did not explicitly request euthanasia (8% [CI, 5% to 12%]); and the patient viewed terminal sedation as less disturbing to the natural process of dying than euthanasia (4% [CI, 2% to 8%]).

Discussion

Terminal sedation is frequently used in end-of-life care in the Netherlands. Half of all physicians have practiced terminal sedation. Our study shows that terminal sedation preceded an estimated 10% (CI, 9% to 11%) of all deaths in the Netherlands. Another recent Dutch study with a different study design estimated the incidence of terminal sedation to be 4% of all deaths (31). These percentages are lower than the previously reported percentages of 15% to 60% (4, 5, 20–24, 26). This difference is probably explained in part by the fact that the incidences found in most other studies do not refer to all deaths in a population but rather to deaths in a selected inpatient care setting, such as a hospital or a hospice (4, 5, 20, 22–25). Another factor that may explain the higher rates of terminal sedation in other studies is our very specific definition of terminal sedation: Patients had to be deeply sedated or comatose, and

Table 5. **Drugs Used, Intention of the Physician, Estimated Shortening of Life, and Discussion about Euthanasia in Each Physician's Most Recent Case of Terminal Sedation, by Physician Specialty**

Variable	Clinical Specialists (*n* = 103), *n* (%)	General Practitioners (*n* = 53), *n* (%)	Nursing Home Physicians (*n* = 55), *n* (%)	All Physicians (*n* = 211), *n* (%)
Drugs used*				
Only benzodiazepines	12 (12)	14 (26)	19 (35)	45 (21)
Benzodiazepines in combination with morphine or morphine derivatives†	35 (34)	17 (32)	22 (40)	74 (35)
Benzodiazepines in combination with other drugs (excluding morphine or morphine derivatives)	2 (2)	7 (13)	0 (0)	9 (4)
Only morphine or morphine derivatives	44 (43)	10 (19)	12 (22)	66 (31)
Morphine or morphine derivatives in combination with other drugs (excluding benzodiazepines)	4 (4)	4 (8)	2 (4)	10 (5)
All other drugs or combinations	5 (5)	1 (2)	0 (0)	6 (3)
Terminal sedation used‡				
Without the intention of hastening death§	35 (34)	17 (32)	23 (42)	75 (36)
Partly with the intention of hastening death§	51 (50)	25 (47)	24 (44)	100 (47)
With the explicit intention of hastening death§	17 (17)	11 (21)	8 (15)	36 (17)
Explicit intention concerned§				
Sedation	3 (3)	1 (2)	0 (0)	4 (2)
Forgoing artificial nutrition or hydration	14 (14)	7 (13)	8 (15)	29 (14)
Both sedation and forgoing artificial nutrition or hydration	0 (0)	3 (6)	0 (0)	3 (1)
Estimated shortening of life‖				
No shortening or <24 h	36 (36)	23 (44)	22 (42)	81 (40)
1–7 d	40 (40)	16 (31)	11 (21)	67 (33)
1–4 wk	19 (19)	11 (21)	14 (27)	44 (21)
>1 mo	6 (6)	2 (4)	5 (10)	13 (6)
Euthanasia discussed¶	26 (25)	35 (66)	16 (29)	77 (37)
Reasons euthanasia was not performed				
Wish of the patient	4 (4)	11 (21)	4 (7)	19 (9)
No explicit patient request	5 (5)	8 (15)	3 (5)	16 (8)
Terminal sedation is palliative care, part of natural process of dying	6 (6)	3 (6)	0 (0)	9 (4)
No legal framework	3 (3)	3 (6)	0 (0)	6 (3)
Rapid dying process	1 (1)	3 (6)	2 (4)	6 (3)
Unknown/other	8 (8)	7 (13)	7 (13)	22 (10)

* In 1 case, information on drugs used was missing.
† Possibly combined with other drugs.
‡ Forgoing artificial nutrition or hydration concerned the intention of "hastening death" or "not to prolong life."
§ Intention concerned either sedation or forgoing artificial nutrition or hydration.
‖ In 6 cases, information on estimated shortening of life was missing.
¶ In 1 case, information on whether euthanasia was discussed was missing.

patients receiving artificial nutrition and hydration were excluded. Other studies used less restrictive definitions. Some included moderately sedated patients, some included a majority of patients who were sedated intermittently, and none excluded patients receiving artificial nutrition and hydration (4, 5, 20–24, 26).

Clinical specialists performed half of all cases of terminal sedation, although they attended 35% of the total number of deaths in the Netherlands. Apparently, terminal sedation is more often practiced in a hospital than at home. This may be explained in part by the fact that in-hospital patients (especially those with cancer or cardiovascular disease) more often have severe symptoms or extreme exacerbations of conditions.

The sample of physicians' most recent cases of terminal sedation included about equal proportions of both sexes. Approximately one third of all deaths resulting from terminal sedation were in patients 80 years of age or older, whereas 46% of all deaths in the general population occurred in this age group (33). The major reasons for using terminal sedation were to alleviate severe pain, agitation, dyspnea, and anxiety. In a review of 17 studies that ad-

dressed the use of sedatives in the care of patients with cancer who were in the final stages of life, a syndrome of delirium and agitation was the most frequently mentioned indication for sedative use; pain was a much less common reason for sedation (21). However, most of these studies did not take into account the use of opioids. In addition, patients in some of these studies were only moderately sedated.

In our study, terminal sedation was performed with benzodiazepines in 60% of the most recent cases seen by physicians and with morphine or morphine derivatives in the remaining most recent cases seen. Other studies also found that benzodiazepines were most commonly used for deep sedation in patients nearing death. The use of opioids alone for deep sedation is regarded as less effective than the use of sedatives and may even be counterproductive (8, 21, 22). Cherny and Portenoy have produced guidelines for the use of sedation for controlling symptoms; in their opinion, benzodiazepines are the most favored class of sedatives in palliative care worldwide (34). Some researchers suggest that opioid use for relief of pain and other symptoms should be continued when sedation is being instituted to avoid the possibility of unobservable pain or symptoms of opioid withdrawal (8). Opioids are frequently used in hospital settings to treat pain and other symptoms. The relatively high proportion of morphine-induced cases of terminal sedation in our study may indicate that unconsciousness was a consequence of pain and symptom management or of progression of the underlying disease.

In our study, terminal sedation was almost always discussed with relatives but not always with the patient, who was often no longer communicative. A remarkable finding was that general practitioners were much less likely to consult other physicians or caregivers. In addition, the physicians in our study rarely consulted specialists in palliative care from other institutions and rarely consulted pain management teams. General practitioners were less likely to involve nurses in decision making about terminal sedation than were other physicians. This may reflect the fact that nurses are less available to general practitioners than to physicians working in institutional settings.

If life-sustaining treatment, such as artificial nutrition or hydration, is forgone in patients nearing death, death will usually occur within a short time. However, in our study, 36% (CI, 29% to 42%) of the physicians made their most recent decision to perform terminal sedation without the intention of hastening death. The physicians partly had the intention to hasten death in 47% (CI, 41% to 54%) of cases and the explicit intention to hasten death in 17% (CI, 13% to 22%) of cases. In most reported cases, this explicit intention concerned the decision not to give artificial nutrition or hydration. The estimated shortening of life was limited to less than 1 week in 73% (CI, 67% to 79%) of the cases most recently seen by physicians, indicating that the practice of terminal sedation is not restricted to patients for whom death was imminent.

When making the decision to perform terminal sedation, the physician may have considered euthanasia, that is, the administration of drugs with the explicit intention to end life at the patient's request. The Dutch euthanasia law was enacted in 2002, but from the early 1990s, physicians who met the official criteria for prudent practice were not prosecuted for performing euthanasia. Euthanasia was discussed in the course of the decision-making process in about 40% of the cases. Physicians reported that the main reasons for choosing terminal sedation rather than euthanasia were the patient's preference for terminal sedation to euthanasia and the patient's belief that terminal sedation was less intrusive than euthanasia on the natural dying process. In some cases, the physicians reported that euthanasia could not be performed because the patient did not fulfill the requirements (for example, an explicit patient request for euthanasia) of prudent practice for euthanasia. In general, there was a lack of explicit request when the patient was incompetent or moribund.

In the Dutch context, there are some obvious ethical and practical differences between terminal sedation and euthanasia. By definition, euthanasia is the result of an explicit request of the patient. Such a request is not necessary for terminal sedation. However, the presence (33% in our study) or absence of a patient's request or at least discussion with the patient (59% in our study) can be important in the justification of terminal sedation. With euthanasia, patients die as a result of the administration of lethal drugs. By contrast, with terminal sedation, patients die naturally as a result of their disease (this is most likely when death occurs in a few days), as a result of forgoing artificial nutrition or hydration (when death occurs after more than a few days), or as a result of the administration of sedatives. In addition, physicians always use euthanasia with the explicit intention of hastening death, whereas hastening death is the primary intent in only a fraction of terminal sedation cases. Researchers have shown that approximately 2.6% of all deaths in the Netherlands are preceded by euthanasia; 20% are preceded by the alleviation of pain or symptoms; and 20% are preceded by decisions to withhold or withdraw potentially life-prolonging treatments (33). Cases of terminal sedation in which hastening of death was not intended or taken into account cannot be considered to represent either of these end-of-life decisions. When physicians prescribe sedatives with the explicit intention of hastening death, their actions may be regarded as intentional ending of life.

Our study has several limitations. First, face-to-face interviews may be biased by interviewer interpretation. Moreover, the respondents may have felt obligated to give socially acceptable answers. We attempted to eliminate these biases by carefully selecting and training the interviewers and by ensuring strict anonymity of the respondents. Second, the respondents may have had difficulty recalling the patient's characteristics; however, recall bias was probably limited because most cases involved patients

who died during the preceding 2 years. Third, the term "terminal sedation" can evoke different connotations and interpretations in respondents. We tried to avoid this problem by providing a very specific definition of the term. Last, our findings may not be generalizable to other countries because of the openness in Dutch society about end-of-life issues.

We conclude that terminal sedation precedes a substantial number of deaths in the Netherlands. Terminal sedation is an option that is used to alleviate severe symptoms in the last phase of life; in most cases, it shortens life to less than 1 week. According to our reports about physicians' most recent cases, terminal sedation is usually provided after discussion with the patient, relatives, and caregivers. In a limited number of cases, when the physician administers a sedative with the explicit intention to hasten death at the explicit request of the patient, terminal sedation seems to approximate the practice of euthanasia.

From Erasmus MC, Rotterdam, and Vrije Universiteit Medical Center, Amsterdam, the Netherlands.

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Requests for Single Reprints: Judith Rietjens, MSc, Department of Public Health, Erasmus MC, PO Box 1738, 3000 DR Rotterdam, the Netherlands; e-mail, j.rietjens@erasmusmc.nl.

Current author addresses and author contributions are available at www.annals.org.

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