The legal dilemma of stopping artificial feeding

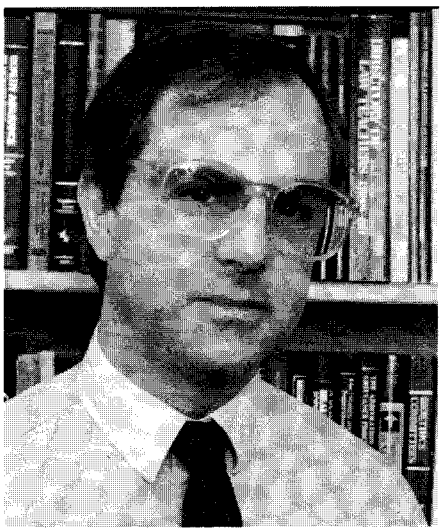
John D. Blum, MS, JD

"... He sees deep and is glad, who accedes to mortality and in his imprisonment rises upon himself as the sea in a chasm, struggling to be free and unable to be, in its surrendering finds its continuing"

— excerpt from *What are Years* by Marianne Moore

Introduction

Issues involving the withdrawal of life support have recently been the subject of national debate. As the U.S. Supreme Court struggles with the Nancy Cruzan case, the public has focused on the rights of a patient in a persistent vegetative state (PVS).[1] While the public recognizes the tragedy of someone caught in a twilight zone of life, consensus about how such cases should be handled has not been achieved.[2] Fueled by fears of liability, the decisions about the propriety of withdrawing life support have been shifted from the bedside to the courtroom. For the present the law in this area is unsettled and in transition.



John D. Blum is Professor and Director of the Institute for Health Law, Loyola Law School, Chicago, Illinois

Most hospice practitioners have grappled with withdrawal of life-support issues. They are caught in the same legal limbo surrounding the issue as their colleagues not working in hospices. The purpose of this article is to review the status of the law's impact on decisions to suspend hydration and nutrition. Withdrawal of life-support covers a range of technologies, but for the hospice provider, suspension of food and water seems to be the most relevant. This article will examine judicial approaches, statutory considerations, and practical implications for hospice practitioners.

The Cruzan case

The U.S. Supreme Court opinion in the Cruzan case will affect court decisions about when it is legally appropriate to withdraw life-supports from incompetent patients.[3] If the Supreme Court rules that the legal right of privacy is sufficient to allow a family to make the decision about withdrawing sustenance, this will clearly determine the law. There is, however, a possibility that the Court could dodge the issue and rule that the existence of legal rights to suspend hydration and nutrition is a matter for each state to decide. Thus, it is not an idle exercise to review the law in this area prior to the Cruzan decision.

Common features

There are certain common themes in the case law concerning withdrawal of hydration and nutrition (as well as other life supports). The individuals on whose behalf someone is seeking to suspend treatment must be mentally incompetent. If a patient is mentally competent (or has periods of competency), it is well established that an individual has the right to refuse treatment even if the providers disagree with such a decision. In withdrawal of life-support cases, the courts are struggling with ways to safeguard the rights of the incompetent to have an appropriate decision made for them and thus be treated in a manner equivalent to a competent person.

Basis of the right

The legal right of the incompetent patient to refuse treatment is based on either the constitutional right of

Advance directive statutes

Forty states and the District of Columbia have a living will statute, also known as Natural Death Acts, Medical Treatment Decisions Acts, and other names.

States without a living will statute are:

Kentucky	New York
Massachusetts	Ohio
Michigan	Pennsylvania
Nebraska	Rhode Island
New Jersey	South Dakota

Twenty-five states have a durable power of attorney (DPA) statute that explicitly permit DPA to authorize withdrawal or withholding of life support or that have been interpreted as allowing proxies for health care to authorize withdrawing or withholding of life support.

States without durable power of attorney statutes that explicitly permit DPA to authorize withdrawal or withholding of life support or that have been interpreted as allowing proxies for health care to authorize withdrawing or withholding life support are:

Alabama	New Hampshire
Alaska*	New Mexico*
Colorado*	North Carolina*
Connecticut	North Dakota
Georgia	Oklahoma
Kansas	Pennsylvania*
Kentucky	South Carolina
Massachusetts	South Dakota
Michigan	Tennessee
Mississippi	Washington*
Missouri	West Virginia
Montana	Wisconsin
Nebraska	

(*States with * have a durable power of attorney statute that authorizes consent to medical treatment but make no mention of authority to withdraw or withhold life support.)

Six states have neither a durable power of attorney statute for health care nor a living will statute.

Kentucky	Nebraska
Massachusetts	Pennsylvania
Michigan	South Dakota

Source: The office of Senator Danforth.

privacy or the common law right of self-determination. As a constitutional doctrine privacy is a relatively new right. It is recognized in both federal and state law as affording an individual both personal autonomy and freedom from bodily invasion. Under the common law doctrine of self-determination a person is free to exercise control over his body stemming from a long tradition of physical freedom.

State interests

In our legal system individual rights are not always absolute. Conflicts arise in withdrawal-of-life-support cases when states allege that they have interests which are more compelling than those of the individual patient. States usually argue that one or more of four state interests outweigh individual freedom to have life-support withdrawn. These are:

- The integrity of the medical profession,
- Protecting innocent third parties,
- Prevention of suicide, and
- Preservation of life.

Generally the incompetent patient's rights to privacy and self-determination have proven to be more compelling than state interests. In *re Quinlan*, the original right to die case, the New Jersey Supreme Court reasoned that as an incompetent person's prognosis diminishes their rights grow and the states' rights to intervene, in turn, are reduced. The Quinlan court's analysis has been widely accepted by other courts.

Surrogate decision making

Who should act on behalf of the incompetent person? In most jurisdictions family members can legally assume a surrogate decision-making role. In other instances decisions must be made by a court appointed guardian. What standard should be used when a surrogate decision maker, either a guardian or family member, determines whether hydration or nutrition should be suspended?

Surrogates are typically required to use the substituted judgment standard. This standard requires decision making from the perspective of the patient. The surrogate, based on knowledge of the incompetent person, must decide whether sustenance should be suspended as though the surrogate were the patient.

The other decision making standard is the best interest standard. Best interest requires the surrogate to make decisions that the surrogate feels are warranted by the situation. Courts have been very adamant that, regardless of the standard used, surrogates shouldn't base their decisions on an analysis of the patient's quality of life. It is, however, questionable whether surrogates can really divorce themselves from quality of life considerations.

Advanced directives

Advanced directives, durable powers of attorney, and living wills have impacted recent life-support withdrawal cases.[5] Presumably an appropriately executed advanced directive should resolve uncertainties about the wishes of the incompetent person. But there are difficulties with advanced directives stemming from procedural problems in execution and scope of coverage, which, in turn, influence enforceability. In addition, quirks of state law make some of these directives inapplicable to certain situations. For example, under Illinois law, living wills don't apply to withdrawal of nutrition and hydration.[6]

There are two types of advanced directives, living wills and durable powers of attorney. Durable power of attorney is more flexible and generally easier to execute. It shifts decision making to a third party. It may be

The patient self-determination act: S. 1766

Introduction

The Patient Self-Determination Act seeks to promote patient well-being, respect for patients' preferences, quality patient-physician relationships, and patients as educated consumers of health care.

The Patient Self-Determination Act (S. 1766), now before the Senate Finance Committee, would promote widespread public education regarding health care proxies and living wills. Medicare and Medicaid providers (hospitals, nursing homes, rehabilitation centers, clinics) would have an obligation to inform all patients about their right under state law to execute written documents (either appointing a proxy, leaving instructions, or both) to be activated should they become incompetent.

The legislation would also require those few states without any advance directive legislation (which allows patients to terminate life-sustaining treatment) to enact such legislation. The following states lack either a living will statute or a statute allowing a durable power of attorney for health care to authorize withholding or withdrawal of life-sustaining treatment: Kentucky, Massachusetts, Michigan, Nebraska, Pennsylvania, South Dakota.

Need for the legislation

The bill addresses the serious lack of knowledge regarding the tools available to patients to formally express their views of life-sustaining treatment. Although medical providers attempt to respect the wishes of patients in the absence of advance directives, in all circumstances such a document would enhance patient participation in health care decisions.

- Common law and medical practice have traditionally recognized the right of a competent adult to accept or reject medical or surgical treatment.
- Recent advances in medical science and technology have made it possible to prolong dying through the use of artificial, extraordinary, extreme, or radical medical or surgical procedures.
- The use of such medical or surgical procedures increasingly involves patients who are unconscious or otherwise incompetent to accept or reject medical or surgical treatment affecting them.
- The traditional right to accept or reject medical or surgical treatment can be exercised even if one is incompetent. Most states legally recognize either living wills or durable powers of attorney for health care as mechanisms for incompetent patients to exercise their common law right to refuse or accept treatment.
- Yet only four percent of hospitals actively inquire whether patients have completed a living will or have legally appointed a health care proxy.
- Only nine percent of the population has executed a living will, few persons have appointed a health care proxy (durable power of attorney for health care).

drafted to specifically cover the withdrawal of life-supports including hydration and nutrition. In some states the format for medical durable power of attorney is specified in state law. While such prescribed forms remove ambiguities, they also result in a rigidity that could lead to non-enforcement for failure to follow the mandated language or procedure.

There have been cases where an advanced directive was rejected because of its improper execution or lack of application to the situation at hand.[7] However, to date, neither the durable power of attorney nor the living will have been subjected to a major judicial challenge.

In some instances advanced directives have had strong evidentiary impact, but the decision in question was not based solely on the existence of the document. Hopefully as advanced directives become more commonplace they will be viewed as binding instruments and not merely as evidence of individual intent.

There are other laws affecting withdrawal of hydration and nutrition. Some states have adopted legislation which delineates specific guidelines for the withdrawal of life-support by a surrogate. An example is the Connecticut Removal of Life-Support Systems Act.[8] In Florida, the state constitution was amended to recognize a right to privacy in medical treatment decisions.[9]

Ordinary versus extraordinary

Withdrawal–of–hydration–and–nutrition legal disputes often classify such treatment as either ordinary and natural processes or extraordinary and artificial. The implication is that the administration of solid food and liquids is not really a form of medical treatment, but rather a more fundamental process which can not be terminated. Medical opinion has, however, refuted such an argument. In fact, some suggest that artificial feeding may be more invasive than other forms of therapy.[10] The courts have rejected the notion that a gastrostomy tube is different from medical treatment.

Liability

Fear of liability is an important factor in right-to-die litigation. In many of the reported cases there appears to have been the possibility of a consensus that life-support be withdrawn based on patient and surrogate requests supported by medical prognosis. However, one of the key parties, the institution, a treating physician, a family member, objected. The objection, particularly when it comes from the health provider, is probably triggered by a concern for civil and criminal liability.

- An estimated 10,000 people in this country are in a persistent vegetative state, being maintained by life-support. This figure does not include terminally ill persons with debilitating diseases who are no longer competent to make decisions.
- The lack of knowledge and discussion about advance directives causes families to endure the agonizing decision of whether and when to authorize the termination of treatment sometimes without any clear knowledge of their loved one's wishes.
- The lack of knowledge and discussion about advance directives promotes the fear of malpractice for physicians because they have no clear directive or knowledge regarding a patient's wishes.
- The lack of knowledge and discussion about advance directives leads to cases like that of Nancy Cruzan, where the state has refused to allow treatment to be terminated due to the lack of any clear and convincing evidence as to her wishes.
- Routinely informing people about their right under state law to either execute a living will or legally appoint a durable power of attorney for health care will provide greater opportunity for people to discuss and document their views of life-sustaining treatment in advance. It will enhance communication between patients, their families, and doctors. And most importantly, it will further protect the well-established right of patients to direct the health care decisions affecting themselves.

Outline of the bill

Medicare and Medicaid providers must have policies and procedures to:

- Inform patients of their rights to make decisions concerning medical care, including the right to have a durable power of attorney and a living will and to leave instructions for organ donation.
- Inquire whether patient has such a document or person designated. No patient will be denied care based on the absence or presence of an advance directive.
- Document whether an advance directive is present, as well as any treatment wishes a patient offers, and review this information with patients periodically as they return to the facility.
- Facilitate the implementation of legally valid advance directives (to the extent permissible under state law).
- Arrange for a transfer of the patient, if as a matter of conscience a physician cannot implement the wishes of the patient.
- Establish an institutional ethics committee.
- States must pass a statute recognizing validity of advance directives (either living will statutes or durable powers of attorney statutes).

The Department of Health and Human Services (HHS) will be required to study the implementation of directed health care decisions. HHS shall develop and implement a national campaign to inform the public of the option to execute advance directives and of a patient's right to participate in and direct health care decisions.

Source: The office of Senator Danforth.

The use of statutory and judicial procedures has reduced anxiety about liability. However, the lingering uncertainties in this area mean that fear of liability still exists. However, criminal actions based charges of inappropriate removal of life support are very rare.[11]

Experience does not bear out the belief that either criminal or civil liability will ensue from removing life-support. If health providers act reasonably, within the bounds of accepted medical practice, the potential for a finding of legal liability for removing a feeding tube is remote.

Case law

There is now a significant body of case law dealing with withdrawing life-supports, primarily ventilators and feeding tubes.[12] This case law begins with the 1976 Quinlan decision. Generally, the cases support individual patient privacy and personal autonomy. However, a minority of cases reject requests to remove life-support. Based on the Cruzan case, it is clear that many aspects of the matter still remain to be resolved.

Three state court cases, Cruzan v. Harmon (Missouri), in re Longeway (Illinois) and McConnell v. Beverly Enterprises of Connecticut Inc. (Connecticut) typify recent judicial intervention dealing with requests to remove hydration and nutrition from patients in a PVS. The three cases illustrate the range of legal approaches which have been applied to surrogate requests to cease artificial feeding.

Cruzan

The Cruzan case has been widely publicized. It is now the focal point for the current debate over the nature of an incompetent person's rights. Nancy Cruzan, a young woman, was involved in a serious automobile accident that rendered her severely brain damaged. She was diagnosed as being in a persistent vegetative state. She is unable to swallow food and water and must be sustained through a gastrostomy tube. While her life expectancy is 30 years, there is no hope for her recovery. Her parents sought and obtained a court order authorizing the removal of the feeding tube.

Both the state of Missouri and Cruzan's guardian for the purposes of this court proceeding (guardian *ad litem*) appealed the lower court ruling and a sharply divided Missouri Supreme Court reversed the trial court order. Based upon what the Missouri Court perceived as the state's overriding interest in preserving human life, the court reasoned that Nancy Cruzan's right to refuse treatment was not compelling. The court felt that Missouri law demonstrated a strong tradition of protecting human life in all its

forms. In addition, the state court refused to recognize the authority of a guardian to authorize withdrawal of treatment that would result in death.

In December 1989, the U.S. Supreme Court heard the Cruzan case. A key element of this case is that it raises questions about the legal status of the constitutional privacy doctrine. Not only is a surrogate's ability to enforce an individual's right to have life supports withdrawn protected by the constitutional doctrine of privacy, but also the right of a woman to seek an abortion. If the Supreme Court recognizes the status of privacy as a constitutional doctrine in Cruzan, the court may be hard pressed to reject it in future abortion cases.

Of interest, the Bush Administration is supporting the State of Missouri's position in Cruzan, arguing that there is no constitutional right of privacy.[13] The political implication of the Administration's position in light of abortion politics is quite clear. It is somewhat ironic that the Justice Department, with its many, longstanding efforts to oppose big brother, endorses government intervention in such a personal matter.

Hopefully, the Supreme Court can steer its way around the politics and craft a reasonable solution to the Cruzan case which recognizes individual autonomy.

Longeway

The Illinois Supreme Court recently issued a withdrawal-of-life-support opinion in the case of In re Estate of Longeway.[14] The Longeway case involved a 76-year-old nursing home resident who had suffered a series of strokes and other medical problems. She was in a persistent vegetative state. Her daughter and guardian petitioned the court to withdraw her gastrostomy tube. The petition stated that while Longeway was competent she had expressed the wish not to be kept alive by artificial means. However, she had not executed an advanced directive to that effect. The lower court rejected the petition. The case was granted direct review by the Illinois State Supreme Court.

The issue in Longeway was not whether an incompetent patient had the right to remove hydration and nutrition supports. It was whether the guardian could exercise such right, and, if so, how? On the basis of common law autonomy, and not privacy, the Illinois Supreme Court ruled that a guardian could request cessation of artificial feeding provided certain conditions were met.

The court established the following criteria:

- The patient must be terminally ill,
- Diagnosed as irreversibly comatose or in a PVS, and
- The diagnosis must be confirmed by two consulting physicians.

The court did not indicate whether a guardian could use a best interest test as opposed to the substituted judgment standard it endorsed, nor did it address the impact of advanced directives. Even with the criteria met, the state court held that guardians had to obtain judicial approval. The court mandated judicial approval to ensure the protection of the states' interest in preserving life and to prevent guardian abuse.

Longeway allows guardians to decide to remove hydration and nutrition. However, it does so in a way that limits the applicability of the decision. It relies on standards which are vague. For example, the definition of terminal illness is based on the Illinois living will statute which uses very open ended language to describe terminal illness. Further, the requirement that an individual be diagnosed as irreversibly comatose or in a PVS has been criticized by clinicians as medically ill-defined. There is lack of scientific agreement about diagnosing patients with limited brain function. Courts and legislatures face an overriding problem when crafting policies based upon these diagnoses.[10]

Clearly Longeway represents a good-faith attempt to strike an equitable compromise between guardian and patient rights versus state interest. Like many compromises the result is strained. Rather than endorse the guardian's role in making decisions that would allow the wishes of the incompetent person to be easily achieved, mandatory judicial intervention is required. This not only undermines patient autonomy, but adds needless cost and delay. Longeway opens the door to withdrawal of nutrition and hydration beyond Cruzan. However, it does so in such a limited fashion that it raises serious questions about the decision's viability.

McConnell

In contrast to Longeway, McConnell v. Beverly Enterprises is a much stronger endorsement of patient privacy and autonomy.[15] The patient in question, Carol McConnell, was in a serious automobile accident in 1985. She never regained consciousness. She was in an irreversible persistent vegetative state, diagnosed as terminal, and kept alive through the use of a gastrostomy tube. As a former emergency room nurse, McConnell had repeatedly told her family that in the event of her permanent, total incapacity, she did not want to be kept alive by artificial means, including life-sustaining feeding tubes.

Mrs. McConnell's family petitioned a lower court to allow gastrostomy tube removal. On the basis of a common law right of self-determination, a constitutional right to privacy, and a Connecticut statute authorizing the removal of life-support systems, the trial court granted the family's request. The lower court decision was appealed by the Connecticut Attorney General's office.

The Connecticut Supreme Court addressed the applicability of the state's Removal of Life-Support Systems Act in its decision. The Act allows for life-supports to be withdrawn provided:

- The decision is based on the attending physician's best medical judgment,
- The patient is terminal,
- Appropriate family or guardian informed consent is obtained, and
- The physician takes into account the patient's wishes.

The statute's definition of life-support system does not include nutrition and hydration.

The court found that the Connecticut law is based upon well-recognized common law and constitutional law rights. Thus, the law must be interpreted consistent with these rights. Based on the court's reading of the applicable case law, it concluded that distinctions between removal of respirators and feeding tubes aren't valid. While not defined in the act as a life support, the Connecticut Court ruled that a gastrostomy tube is a form of artificial technology that fits within the state law's intent. The statutory prerequisites were fulfilled so the court was able to affirm the lower court ruling in favor of the family.

Even if the state court did not find that Mrs. McConnell was covered by the Connecticut Removal of Life-Support Systems Act, it seems that it would have allowed the family to withdraw the feeding tube on either a common law or constitutional law basis. The Connecticut Supreme Court clearly asserted that there is a strong body of law which allows self-determination for incompetent patients. If the medical criteria are met and the patients wishes are clear, withdrawal of hydration and nutrition can occur in Connecticut with far fewer legal impediments than in either Missouri or Illinois.

Hospice providers and withdrawal issues

As the law involving withdrawal of nutrition unfolds in the courts and state legislatures, its impact on the daily workings of health providers must be addressed. How should hospice providers conduct themselves when confronted with whether to insert or withdraw a feeding tube? Some hospices will not admit patients with feeding tubes into their programs, but this is not an adequate answer.

Hospices offer more humanistic treatment alternatives to the dying. Hospices should focus on what is best for the patient and family. While the law may be murky, it respects the health provider who acts in manner that is humane and medically appropriate. The trend in the law is that if the patient is in a PVS and there is strong evidence that the individual would not want to be sustained in such a condition, life-support can be withdrawn. Unfortunately there are exceptions to this trend. The Cruzan case demonstrates that the law is still unsettled. Therefore, providers can't be oblivious to legal pitfalls.

Hospice care-givers should be aware of the case law in their state and they should set policies about hydration and nutrition in conformity with applicable laws, regulations, and case law. If hospices are in jurisdictions that don't allow withdrawal of gastrostomy tubes, programs need to conform to such rulings. However, cases are often quite narrowly decided. Programs may be able to craft procedures around the exegeses of a particular decision that aren't as confining as one might expect based on a general reading of a particular case.

In most states, families can act on behalf of a loved one when making decisions about medical treatment. Therefore, it is critical that hospice providers make family members fully aware of a decision to end nutrition and hydration, and obtain their informed consent to do so. It is the responsibility of providers to adhere to the wishes of family members.

If there is a family dispute about treatment alternatives the hospice should encourage appointment of a guardian. A guardian is the primary decision maker for an incompetent patient. When guardianship is involved it is important for the hospice providers to be aware of the rationale being offered by the guardian requesting removal of a feeding tube. While the hospice staff aren't lawyers, they should know what the legal standard is which a guardian must meet in making decisions. If it appears the standard isn't being met, the hospice should seek outside legal consultation prior to suspending artificial feeding.

Where advanced directives and other statutes allowing for surrogate decision making exist, hospice programs should be aware of them and act in accordance with their provisions. In particular the procedural details specified in advanced directive and surrogate decision making statutes should be carefully observed. Any oversight in an advance directive, in the documentation or enforcement requirements, as well as changes in the patient's clinical condition, can render the instrument invalid. While one could argue that hospices should encourage advanced directives, it may be more appropriate to define the hospice role more broadly by encouraging an open dialogue about artificial feeding generally.

Conclusion

The law regarding termination of sustenance is in flux. It is possible that the Supreme Court opinion in Cruzan may resolve some uncertainties. It is also conceivable that the issues might

(continued on page 48)

Classified Advertisement

MEDICAL DIRECTOR—Full and/or part time physician for well-established Medicare certified hospice program.

Responsible for the overall medical management of hospice patients via the establish ment of a medical care plan. Provides leadership and direction to the clinical staff; develops and implements medical policy and procedure; supervises other hospice physicians; assists the CEO in the planning and implementation of program changes.

Salary negotiable.

Resumes to: **Medical Director Search Committee, Hospice Buffalo, 2929 Main Street, Buffalo, New York 14214.**

The legal dilemma

(continued from page 47)

revert to the states. For the present, hospice providers must follow the law in their states as best they can. Where explicit legal guidance is lacking, providers should follow appropriate clinical and hospice practice. Hopefully our legal system will soon provide a reasonable and definitive answer to the dilemma of how and who should withdraw a feeding tube from a patient suffering from PVS. As the frontiers of life are stretched, the law will continue to struggle to adapt. Health providers will need to cope as best they can in the face of yet to emerge life-preserving technologies.❑

References

1. Cruzan v. Harmon 7660 S.W.2d 408 (Mo, 1988), cert. granted 109 S. Ct. 3240 (1989)
2. See generally, Baird RM, Rosenbaum S, eds.: Euthanasia: The moral issues. Prometheus Books, Buffalo, NY, 1989
3. Supra at n.1
4. In re Quinlan 70 N.J. 10, 355 A2d 6647 (1976)
5. Concern for dying: The living will and other advanced directives. Concern for Dying, New York, 1986
6. Ill. Rev. Stat. 1987, ch. 1101/2 par. 804-1 et seq.
7. For example, see In re Estate of Prange, 121 Ill. 2d570 (1988)
8. Conn. Gen. Stat. sec. 19a-570-575 (Supp. 1989)
9. F.S.A. see 382.085, 382.085 (4), F.S.A. Const. Art. 1, sec. 23
10. Miller RM: Force-feeding the dying: An act of kindness or cruelty. American Journal of Hospice Care 1989;6(6):13
11. Glantz LH: Withholding and withdrawing treatment: The role of the criminal law. Law, Medicine, and Health Care 1987;4(15) Winter
12. Supra at n.1, see the Cruzan case for a detailed review of the case law in this area
13. _____, Bush administration participation permitted in right-to-die case. Medical Liability Advisory Service. November, 1989;103-104
14. In re Estate of Longeway, Illinois Supreme Court Docket No. 67318 - November 1988
15. McConnell v. Beverly Enterprises 209 Conn. 6692 (1989)

Letters to the editor

(Continued from page 8)

To the editor:

I am writing to inform you that there was an error in "News briefs" on page six of the March/April 1990 issue of the *American Journal of Hospice & Palliative Care*. Under the section entitled "Roxanol"™ suppositories introduced," the third item listed under other morphine sulfate products carrying the Roxanol brand name contained the error. Roxanol UD morphine sulfate concentrated oral solution is available in 20mg/mL, and not 100mg/mL, as written in the journal. It would be appreciated if a correction of this error was published in the next issue.

Thank you for your attention to this matter. And thank you for the continued enjoyment we get from reading your journal every eight weeks.

Kirk V. Shepard, MD
Vice President, Medical Affairs
Roxanol Laboratories
Columbus, Ohio