Chemotherapy Review: Focus on Ordering and Administration

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by Natasha Leskovsek, R.N., M.B.A., J.D.

On January 4, 1999, the Massachusetts Board of Registration in Nursing took the unusual step of announcing that it would take action against eighteen oncology nurses involved in the care of two patients who had received chemotherapy overdoses in November 1994 at the Dana-Farber Cancer Institute in Boston, Mass.[1] The overdoses, which received much publicity at the time, led to the death of Betsy Lehman, a health columnist for *The Boston Globe*, and resulted in heart damage for another Boston area woman who later died of recurrent disease. Both women had received, for each of four days, the total four-day dosage of experimental drugs for breast cancer.

Of the eighteen nurses, two have signed consent agreements with the Massachusetts Board of Registration in Nursing for their role in signing off on the mistaken medication orders, thereby accepting a one-year probation and rigorous retraining in cancer chemotherapy administration. The other sixteen, who failed to verify the dosage during monitoring of the drug infusions, will be subject to a disciplinary hearing and possible sanctions ranging from license revocation to a reprimand. The hearings may begin following responses that were due back to the board on January 25, 1999. The board's lengthy delay in taking action in this case is questionable—the overdoses became public in March 1995; the board's action in January 1999 represents a nearly four-year delay. Unfortunately this scenario is typical and highlights the shortcomings of professional licensure boards generally, as noted in the recent Pew Commission Report on Health Professions.[2]

The board's actions provide incentives for community cancer centers to review what systematic checks are in place for the ordering and administration of chemotherapy. Ensuring the "right dose, right time, right route, and right patient" is not merely the responsibility of the nurse, but of many health care professionals. Indeed, the Board of Nursing's actions in this case followed suspension and reprimand actions by the State's Board of Medicine and Pharmacy for the other professionals involved in the incidents. The physician who had written the incorrect order was in training as an oncologist at the time; his license was suspended retroactive to October 1995. He has since gone on to conduct cancer research in London. In 1997 the three pharmacists received professional reprimands for their involvement in the case. Dana-Farber, which has admitted shortcomings in its systems at the time, has since implemented reforms (including $1 million of automation, procedural, and education efforts regarding medication errors[3]), and defended its nurses against the Board of Nursing's "inappropriate and unwarranted" actions. Notably, both the state health department and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) had previously found no fault with the individual nurses involved in the overdoses.[4]

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CHEMOTHERAPY REVIEW

In light of these events, oncology professionals should ensure that their practice setting employs a systematic format for reviewing chemotherapy orders. Such a format may include:

- use of special oncology order forms with preprinted instructions for protocol drugs, dosage levels, and dosage limits
- prohibition on oral orders for chemotherapy
- a requirement that chemotherapy orders be written only by physicians who are board certified or eligible in hematology or medical, pediatric, and gynecologic oncology and their approved fellows (with countersignature)
- triple-check procedure whereby the physician, pharmacist, and nurse independently calculate doses
- use of current weights for dosage calculations
- availability of references for drug dosage limitations
- use of only oncology-certified pharmacists for dispensation and chemotherapy-certified nurses for administration.[5,6,7]

Requirements such as these have proven effective in reducing chemotherapy ordering and administration errors at cancer centers, and can be tailored and combined with other safety checks to meet the individual needs of many institutions. In any effort to review and revise systematic checks, it is essential to convene a meeting of multidisciplinary team members to identify the institution-specific steps (and hazard points) in ordering, dispensing, and administering chemotherapy.

Finally, perhaps the most overlooked step is patient education. Patients should be educated about

any protocols they consent to, particularly the doses and routes of drugs they will be receiving. Equipped with this information, patients have the potential to act as the final guardian against chemotherapy errors. Because of the high degree of participation in self-care that is demanded of many oncology patients, and their often high level of interest in understanding their treatment, many patients and family members are appropriately suited for instruction in protocol doses. Patients should be encouraged to question any element of care that is not in line with what they had anticipated based on the protocol.

THE PROFESSIONAL DUTY OF NURSES

Actions by the Massachusetts Board of Registration in Nursing in this case point to the fact that the nursing duty does indeed transcend hospital policy—even if one is following institutional practices; to do more may be required as part of professional practice. As stated in the Massachusetts law, "Each individual licensed to practice nursing in the commonwealth shall be directly accountable for safety of nursing care he delivers."[8] The safety of oncology nursing care involves verification of the "right dose" for a patient receiving chemotherapy under a protocol, whether it be standard or individualized. In 1994 Dana-Farber's policy did not require nurses to double-check doctors' medication orders or to verify their accuracy with experimental protocols or treatment plans; these requirements have since been implemented.

Managing the proper checking of chemotherapy doses against the "right protocol" is a complex problem on any general medical oncology floor or in any clinic responsible for the administration of various protocols for a wide range of oncologic diseases. Simply "eyeballing" the dose is clearly unacceptable, as many high-dose protocols deal with dosages that are toxic under low-risk or standard protocols. The responsibility of each health professional in the ordering-dispensing-administering pathway needs to stand independently. Although it is critical that we trust our colleagues in providing comprehensive team care, even our best teammates require backstopping to ensure the patient's safety.

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The United States Pharmacopeia (USP) shares the view that focusing on the process or system in which errors occur, rather than blaming an individual or individuals, is paramount.[9] Acknowledging actual and potential errors can highlight areas where change is needed in order to improve patient safety. The USP, in conjunction with the Institute for Safe Medication Practices, operates a confidential and anonymous Medication Errors Reporting (MER) Program, whereby sharing experiences of actual or potential medication errors can lead to the development of improved patient safety programs for the prevention of errors.[10] The MER Program can be accessed on-line at www.usp.org or by calling 1-800-23-ERROR (1-800-233-7767).

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