



LNP 299

Systems Errors and Medication Tragedies

Dr. Allison Muller shared with us in LNP 298 some of the ways she analyzes a case involving a medication error. Some of these errors are due to holes in the system that lead to serious patient injury.

The term “system errors” describes errors in the medication administration process that support *error-prone* practices rather than practices which cannot lead to or do not support errors. Lucian Leape and co-authors described 13 system errors which were identified as “Proximal Causes” of medication errors. These are the system errors they pinpointed.

1. Lack of knowledge about the drug
2. Lack of information about the patient
3. Rule violations
4. Slips and memory lapses
5. Transcription errors
6. Faulty drug identification
7. Faulty interaction with other services
8. Dosing errors
9. Infusion pump/Parenteral delivery error
10. Inadequate monitoring
11. Drug stocking or delivery problem
12. Preparation error
13. Lack of standardization

Of the 13 “Proximal Causes” identified by Leape et al., the failure to provide prescribers with knowledge about drugs accounted for **29%** of errors. Systems failures to provide prescribers with critical information about the patient (e.g., laboratory test results) were associated with **18%** of errors.

These two categories alone led to **47%** of errors including: drug-drug interactions, overdosing patients with diminished renal function, and prescribing drugs to which the patients were allergic.

Dr. Jim O’Donnell shared this case report with me. This settled case dramatically describes a systems failure resulting in significant injury. This case involves a

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patient who received intrathecal vincristine. He did not die but was permanently paralyzed as a result of this medical error. This case makes for a good study of systems design, of the value of systems, and of what happens when the system breaks down (i.e., when the system is not followed).

The patient, a sixty-nine-year-old farmer, was scheduled to complete a successful methotrexate/vincristine treatment for lymphoma at a major university medical center. His prognosis was good.

On the fateful day, he arrived at the oncology clinic for his scheduled methotrexate intrathecal and vincristine intravenous treatment. Because the intrathecal injection must be injected under guided fluoroscopy, the oncologist had reserved a radiology suite.

No nurse was available to accompany or assist the oncologist who was to administer the injection. The oncologist, not wanting to miss the appointment, stopped at the clinic pharmacy and asked the pharmacist for the "methotrexate and flush (preservative-free NaCl)".

The syringes for both the vincristine IV and the methotrexate intrathecal had already been prepared. The staff pharmacist on duty in the clinic pharmacy asked the oncologist, "Would you like the complete order?"

The oncologist confirmed, and the pharmacist proceeded to place both the vincristine and the methotrexate syringes in the container, which the oncologist then took to the radiology suite. There the oncologist injected what he thought was methotrexate, followed by the vincristine syringe (which he assumed was preservative-free NaCl).

The patient was taken back to the clinic, where, he believed, he would receive the intravenous vincristine. But the vincristine could not be found.

A call to the pharmacy led to the discovery that the vincristine had been given to the oncologist who immediately went to radiology and retrieved the discarded syringes from the sharps container.

To his horror, he realized that he had mistakenly administered vincristine intrathecally in place of the saline flush. An emergency spinal-fluid dialysis/replacement was undertaken, saving the patient's life.

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Sadly, the patient was left completely paralyzed below the nipple line of his body. The oncologist, devastated over the event, quickly settled with the patient for \$500,000, and took one year off practice.



This is Pat Iyer.

As an LNC, you are aware of the dangers of anticoagulation with Heparin, Coumadin, Lovenox, and others. These drugs have a very narrow window of safety.

Even in the best of circumstances, when everyone does everything right, anticoagulation can lead to

significant toxicity and bleeding, permanent injury, paralysis, blindness, and death.

Your understanding of anticoagulation is useful for attorneys handling these cases. You can be invaluable in helping the attorney understand how they work (mechanism of interaction, onset and duration of action), using antidotes, and recognizing and avoiding drug interactions.

Sharpen your knowledge of anticoagulation by purchasing our one-hour online training: *Anticoagulation: On the Bleeding Edge*. Hear a pharmacology expert witness, Dr. James O'Donnell, give tips for how to analyze these cases. Order the program at the show notes for this podcast at podcast.legalnursebusiness.com. use the code Listened in the coupon box to get a 25% discount. Now let's return to the show.

The system failed in several ways. Had the system been followed, this accident probably would never have occurred.

First off, a nurse should have accompanied the oncologist, who, while engaged in a delicate intrathecal injection, did not read the label of the syringe he was administering.

Next, the pharmacy department had a policy in place for utilizing the vincristine manufacturer's (Eli Lilly and Company, Indianapolis, Ind.) syringe label, which

read "FATAL IF GIVEN INTRATHECALLY. FOR INTRAVENOUS USE ONLY".

The red-bordered syringe overwrap warned: "FATAL IF GIVEN INTRATHECALLY. FOR IV USE ONLY. DO NOT REMOVE COVERING UNTIL MOMENT OF INJECTION".

The oncology clinic pharmacy manager decided that the label and overwrap were unnecessary for adult patients, because the oncology-clinic staff was competent and well-informed.

The staff pharmacist, who knew about the policy in place in the main hospital's sterile-products-compounding room, followed this "unofficial" exemption. That same staff pharmacist, given a verbal order for the "methotrexate and the flush" gave both the methotrexate and the vincristine, thereby violating another system rule—never to place both the methotrexate and the vincristine in the same container.

Since many staff pharmacists rotated through the oncology-clinic pharmacy, it was common knowledge that the precautionary syringe label and overwrap were not being used.

A lawsuit was brought against the university hospital, the staff pharmacist, the oncology clinic pharmacy manager and the director of pharmacy. The lawsuit alleged the "Hospital and its employees failed to properly promulgate and enforce appropriate policies, procedures and protocols relating to the ordering, packaging, delivery, dispensing, and administration of vincristine.

The Hospital and its employees failed to properly train and supervise employees, and that those failures were substantial factors in causing the plaintiffs' injuries and damages."

The lawyers for the hospital and the pharmacists argued that it was the oncologist who was to blame, and the pharmacists and the hospital were not negligent.

While it was recognized that the oncologist was (admittedly) negligent, an overriding theme of the litigation was that this was a systems failure—that if adequate systems controls had been in place and enforced, the accident would not have happened.

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This was an unnecessary error. After protracted mediation and settlement negotiations, an additional \$1,600,000 was added to the settlement package—thus providing a \$2.1 million settlement, which would almost cover all the future medical expenses and economic losses.

A few years after the settlement, the pharmacy manager of the Oncology Clinic was arrested for theft of narcotics; he admitted abusing meperidine (Demerol) for several years, including the period in which the safeguards for protecting against this type of error were ignored.

I can only speculate whether his abuse of narcotics clouded his judgment. And I wonder what the outcome would have been had the plaintiff discovered the narcotic abuse during the pendency of the lawsuit.

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