



ISMP

# Medication Safety Alert!®

Community/Ambulatory Care Edition

Educating the Healthcare Community  
About Safe Medication Practices



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## Insights into people will improve our safety systems

It is widely recognized that system failures cause errors. Well-designed systems that employ technology, where appropriate and when used correctly, offer the best chance of preventing errors. But has our growing attention to systems and technology caused us to overlook interventions that can improve our mental performance? While we are beginning to better understand healthcare systems, have we devoted equal attention to understanding how the human mind operates and what conditions adversely affect its function? Have we done enough to identify how stress-producing aspects of our home and work environment can affect our job performance and what steps can be taken to help people cope with them? Also, do we consider how personal beliefs, values, and attitudes influence job performance?

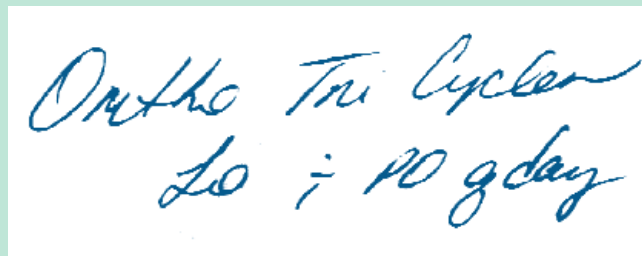
Mental performance and psychosocial factors that impact the accuracy of outpatient pharmacists were studied by the late Anthony Grasha, Ph.D., Professor of Psychology at the University of Cincinnati.<sup>1,2</sup> He considered how environmental factors (work pace, illumination, noise, interruptions), organizational dynamics (supervisory practices), as well as personal qualities (demeanor, patience, ability to manage stress, interpersonal relationships) affect job performance. His research suggests practical methods to prevent errors and improve safety in our workplaces. Here's a sampling of what he found with specific interventions:

**Periodic self-monitoring:** Catching your own errors helps to improve performance by learning from your own mistakes and identifying error-prone time periods. However, errors were reduced by 21% when pharmacists periodically monitored themselves to detect errors (compared to those who did not monitor themselves). In addition, when completed prescriptions (in "will call" area) were rechecked, 95% of previously overlooked errors were identified. Lastly, mistakes were detected less frequently as the amount of continuous time spent on a specific task increased. Thus, taking a short break or changing to a different task increases effectiveness.

**Light and magnification:** The actual as well as the *perceived* level of pharmacy lighting can affect job performance. Pharmacists who rated the level of lighting as adequate  
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## Safety Briefs

■ When **ORTHO TRI-CYCLEN LO** (norgestimate/ethinyl estradiol) was released in late 2002, we cautioned readers about the potential for confusion with the existing products **ORTHO CYCLEN** and **ORTHO TRI-CYCLEN**. Since that time a number of reports have been received describing mix-ups where Ortho Tri-Cyclen was dispensed instead of Ortho Tri-Cyclen Lo. In fact, mix-ups between these Ortho products are among the most commonly reported name-related errors. The majority have resulted from the wrong product being selected from pharmacy shelves. However, we have also been informed of errors that relate back to how the prescription was written. For example, in one case, a prescriber wrote the "Lo" portion of the drug name below the rest of the name and just before the instructions for use on a prescription (see below). The pharmacist either



Ortho Tri Cyclen  
Lo ; PO qday

overlooked the "Lo" or misinterpreted it as the abbreviation "Sig." In another report, a physician wrote the "Lo" portion of the drug name using lower case letters (lo), making it look like the number 10. A pharmacist interpreted this to mean 10 cycles of oral contraception should be dispensed. In many of these cases, patients recognized the change in packaging before taking the wrong medication. Unfortunately, patients who haven't previously taken the medication would not be likely to detect such an error.

Prescribers must be sure to write drug names appropriately. Using the examples above, the entire drug name should appear on the same line and the "Lo" portion of the name should not be indicated in  
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**Insights** (cont'd from previous page)

detected 38% more mistakes during dispensing than those who perceived the lighting as inadequate. Additionally, study pharmacists complained that pharmacy lighting did not appear to be as good later in a shift. This can be the result of eye fatigue, which occurs over a shift as eyes adapt to background lighting. When supplied with high-intensity task lights to read prescriptions, pharmacists who used them “as needed” reduced product verification errors by 10.7% compared to the control group’s accuracy without the lights. A version that combined the light with a magnification lens reduced the same type of error by 22%.

**Copyholders:** Errors were reduced by 24% after a device to hold prescriptions was installed on the computer monitor. Information provided at a comfortable visual angle, closer to eye level, results in greater attention to details.

**Alerts:** Posting alerts in strategic locations for 30 error-prone products reduced errors with these products by 71% and reduced potentially significant occurrences by 45%. Errors with non-targeted drugs were reduced by 56% as a result of heightened error awareness.

**Exaggerated product labels:** After certain medication stock bottles were affixed with product sleeves that used exaggerated, unconventional fonts to “better-read” sections of drug names or doses, errors with these products were reduced by 27% - 35%.

**Cognitive style and coping skills:** Pharmacists who were able to attend to details and focus their attention made fewer errors. Approximately 12% of pharmacists had difficulty with details and focus, and these pharmacists produced 33% of all the mistakes observed. High intensity lights, copyholders, and exaggerated product labels were especially helpful for such individuals. Pharmacists with adequate coping skills and stress management training also made fewer errors.

**Workload:** Pharmacists were more vulnerable to mistakes under *low workload conditions* (15 or fewer prescriptions per hour) and during shifts from high to low workload. Boredom, reduced task focus, and disruptions in personal work rhythms made it hard to focus on tasks. When surveyed, pharmacists with both low and high workloads were equally concerned about their job performance.

**Breaks:** Pharmacists who *perceived* that break times were adequate and available made fewer errors and detected more errors during self-monitoring.

**Supervision:** Pharmacists who made fewer errors had supervisors who fostered appropriate autonomy, and were perceived as being democratic, facilitative, and helpful in setting goals. Pharmacists who made more errors had supervisors who were perceived as overly autocratic and punitive. Supportive supervisors lowered stress levels and allowed staff to better focus on tasks at hand.

**Performance feedback and goal setting:** Midway through the project, half of the pharmacists were asked to calculate the percentage of errors they observed during self-monitoring. Then, based on a chart of the average percentage of errors made by pharmacists in the study, they were asked to set a performance goal for the remainder of the study. Pharmacists who set a goal to maintain their current level of performance increased error detection by 22%, compared with the control group of pharmacists where no feedback was provided. Those who established goals to improve performance increased their ability to detect and prevent errors by 103%. With a heightened awareness of their performance, they were better able to notice problems. Establishing personal improvement goals combined with constructive feedback about errors proved quite beneficial. Pharmacists ranked feedback and goal setting among the most effective strategies investigated by the researchers.

These interventions are not uniquely suited to pharmacists. Mental performance and psychosocial factors similarly affect people in all environments. Although differences in specific facilities, processes, and individual makeup can influence the success of these interventions, they are widely applicable. According to Dr. Grasha’s research, ongoing understanding about how people react to a variety of factors and integrate them into their mental structures will enable us to find new ways to enhance workflow, physical workspaces, sensory input, and memory. We will also be able to identify new applications for technology as well as improve training for supervision, conflict resolution, and stress management. In the long run, such interventions will lead to increased professional satisfaction, workforce retention, enhanced efficiency and productivity, and improved patient care and safety.

**References:** 1. Grasha A. A cognitive systems perspective on human performance in the pharmacy: implications for accuracy, effectiveness and job satisfaction. Executive Summary Report. Alexandria (VA): National Association of Chain Drug Stores; 2000 Oct. Report No. 062100.

2. Grasha A. Psychosocial factors, workload, and risk of medication errors. *US Pharm* 2002;27(4):HS32-HS52.

## Safety concerns with new Imitrex packaging

In January 2004, GlaxoSmithKline released a new formulation of **IMITREX** (sumatriptan) tablets. The reformulated tablets were designed to quickly disperse in the stomach by drawing in water, causing the tablet to swell and dissolve rapidly. Lactose has been removed from the tablets and additional wicking agents have been added to increase water absorption. This reformulation has made the tablets more sensitive to moisture, necessitating a change in the product packaging, which is creating problems.

The 25 mg, 50 mg, and 100 mg tablets were previously packaged in a box containing a perforated blister card of 9



Old packaging



New packaging

presents a drug identification problem when a quantity other than 9 tablets is dispensed.

A recent report illustrates this problem. When presented with a prescription for 6 tablets, a pharmacist took the original 9-tablet blister card and cut away 3 tablets. The computer-generated label was then placed on the middle

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lower case letters. In order to minimize product selection errors at the pharmacy, we recommend a process where the drug name on the original prescription is compared to the name that prints out on the computer-generated label and also to the actual product being dispensed. In addition, the entire national drug code (NDC) on the manufacturer's package should be verified against the computer-generated label, which also includes the NDC number.

■ A young woman was seen in a hospital emergency department (ED) for a severe injection site reaction after giving herself a dose of the injectable contraceptive **DEPO-PROVERA** (medroxyprogesterone). The drug is available in a prefilled syringe that comes with instructions on how to inject it. The woman had no medical training and had never administered an injectable medication. After reading the instructions and remembering that the pharmacist who dispensed the drug told her that "patients can administer" Depo-Provera, she decided to inject it herself. However, it is unclear whether instructions for self-administration were ever provided by the physician or pharmacist, if the patient was told to return to the physician's office for administration, or if the patient was trying to avoid another office visit and associated fees. Pharmacists dispensing injectable drugs should assure that patients are either instructed to return to their physician's office for administration (in which case, prescription label instructions should reiterate this). Or, for situations where patients are supposed to self-inject, some pharmacists may be authorized to provide the training. Otherwise, pharmacists need to be assured that proper training has been given, which may require direct communication with the patient's other health professionals.

■ Special precautions are needed for **ACTIQ** (oral transmucosal fentanyl citrate), a drug used in the management of breakthrough cancer pain in patients who are already receiving, and tolerant to, opioid therapy. Actiq is best described as a flavored sugar lozenge that dissolves in the mouth while held by an attached handle. Although the drug is an effective treatment for breakthrough pain, it may be fatal to

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**Imitrex** (cont'd from previous page)

portion of the tri-fold pack (now containing a partial card with 6 tablets) and dispensed to the patient. This left the pharmacy with 3 blister-packed tablets with no indication of drug name or strength. The pharmacy noted that when the 25 mg and 50 mg foil blisters were compared, there was only a slight reduction in size associated with the 25 mg blister. This difference could be easily overlooked, causing the tablets to be incorrectly replaced in stock and subsequently misidentified. Similar problems exist for patients when they tear off the fold containing the tablets or when pharmacies dispense loose foil blisters. In these cases, unless the blisters are opened, there is no way to identify the tablets. However, both the 25 mg and 50 mg tablets are white and triangular-shaped.

When we contacted GlaxoSmithKline about these issues, we were informed that their marketing and manufacturing groups were already aware of these problems. They also knew about problems consumers are having removing tablets from the blister pack. They informed us that steps are being taken to improve several aspects of the packaging, and changes should be made over the next year.

Until that time, practitioners and patients should be aware of the potential for product identification problems. Pharmacies should consider using storage bins to separate the various strength Imitrex products. Unidentified tablets that are being returned to stock should first be placed in a container labeled with the drug name, strength, lot number, and expiration date to prevent future misidentification. Tablets should not be removed from individual foil blisters or repackaged in any way, due to moisture sensitivity. Advise patients not to remove a tablet from its blister until they are ready take it. Also, despite the reformulation, tablets must still be swallowed whole, with liquid.

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children and adults who are not already taking opioids. The product is marketed employing an FDA-approved, comprehensive risk management plan that informs healthcare professionals, patients, and their families of proper use, storage, handling and disposal of the product. This program addresses potential risk situations such as accidental ingestion by children, improper patient selection, and diversion or abuse. The product has purposely been packaged and shaped so that it looks nothing like a lollipop. However, inform patients and family members to avoid referring to the drug as a "lollipop" or "candy," which we've seen in some media accounts about the product. Practitioners must reinforce the absolute need for patients and family members to eliminate possible access by anyone other than the patient or caregiver.

■ At a community pharmacy, a woman presented a prescription for what was supposed to be **NORMODYNE** (labetalol) 100 mg BID, but it was misinterpreted as the tricyclic antidepressant **NORPRAMIN** (desipramine) 100 mg BID. After taking one dose, the woman experienced nausea, blurred vision, sweating, and hand tremors. Subsequently, she performed a computer search on Norpramin. Since she knew she was supposed to receive an antihypertensive, she realized that she was given the wrong medication. Similarities in the drug name, dosage, and frequency of administration likely contributed to the error. This may have been avoided if adequate counseling or a medication information leaflet had been provided at the pharmacy.

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