

Delayed Administration and Contraindicated Drugs Place Hospitalized Parkinson's Disease Patients at Risk

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PROBLEM: One-third of all patients with Parkinson's disease visit an emergency department or hospital each year, making it a surprisingly common occurrence.¹ The disease affects about 1 million people and is currently the 14th leading cause of death in the U.S. Hospitalization can be risky for patients with Parkinson's disease when viewed from the perspective of pharmacological management.

Patients with Parkinson's disease require strict adherence to an individualized, timed medication regimen of antiparkinsonian agents. Dosing intervals are specific to each individual patient because of the complexity of the disease. It is not unusual for patients being treated with carbidopa/levodopa to require a dose every one to two hours. When medications are not administered on time and according to the patient's unique schedule, patients may experience an immediate increase in symptoms.² Delaying medications by more than one hour, for example, can cause patients with Parkinson's disease to experience worsening tremors, increased rigidity, loss of balance, confusion, agitation, and difficulty communicating.² Studies show that three out of four hospitalized patients with Parkinson's disease do not receive their medications on time or have had doses entirely omitted.³ According to the National Parkinson Foundation, 70% of neurologists report that their patients do not get the medications they need when hospitalized.²

Undergoing surgical procedures can be particularly risky for patients with Parkinson's disease. Antiparkinsonian agents have been inappropriately withheld because patients were to receive

nothing by mouth (NPO) prior to surgery, and surgical patients have been given a contraindicated anesthetic agent or a centrally acting antidopaminergic drug such as haloperidol, metoclopramide, or prochlorperazine postoperatively. One in three patients with Parkinson's disease has been prescribed contraindicated drugs during hospitalization. Serious complications, mostly neuropsychiatric, have occurred in more than half of these patients.^{3,4}

Two Case Examples

The first case reported to the Institute for Safe Medication Practices (ISMP) involved a woman with Parkinson's disease who was admitted to a hospital with a urinary tract infection. Upon admission, the patient's medications were recorded during medication reconciliation. The patient told the nurse that she needed her medications right away. But she had been uncertain about the dose of a few medications, and it took several hours to collect further information about these doses.

Once ordered, the medications were scheduled using the hospital's standard administration times. However, for patients with Parkinson's disease, it is safest to administer antiparkinsonian drugs according to the scheduled times the patient takes the medications at home.^{2,3} In this case, the patient received all of her antiparkinsonian medications several hours late. While awaiting the medications, the patient found it hard to talk and communicate with hospital staff and her family. Her tremors intensified, and she had difficulty maintaining her balance. She became so confused and agitated from not receiving her medications that her physician ordered haloperidol 5 mg intramuscularly. The physician was not aware that haloperidol can worsen the symptoms of Parkinson's disease,^{5,6} and the pharmacist and nurse did not detect the prescribing error. The adverse symptoms worsened after receiving halo-

peridol, thus lengthening the patient's hospitalization.

Later, when this patient required hospitalization for an elective surgery, the family selected a facility associated with the patient's neurologist. The family assumed the staff would be more knowledgeable about the disease, but they ran into similar problems. The patient did not receive her medications on time and experienced the same symptoms as during the previous hospital admission. Once again, this extended her hospital stay unnecessarily.

In another case, reported to the National Parkinson Foundation, a hospitalized patient with Parkinson's disease had surgery for a herniated disc.² During the admission process, the patient's wife alerted the staff about the need to administer her husband's antiparkinsonian drugs exactly according to his schedule at home. She found staff were unaware of the need for timely drug administration and, thus, repeated the warning with each shift change. However, when the patient's wife was not by her husband's side, he did not get his medications on time. He was also prescribed and administered a contraindicated drug. The patient suffered significant hallucinations and was unable to communicate until his medications were readjusted to his schedule at home.

Other Medication Safety Concerns

Even with correct administration timing based on the patient's home medication schedule, dosing errors have been reported with carbidopa/levodopa. The drug is available in many different strengths and forms, from an orally disintegrating tablet to extended- and immediate-release formulations. Levodopa, which converts to dopamine in the brain, can cause episodes of acute psychosis and dyskinesia when given in large doses, which can unnecessarily extend hospitalization. Also, patients may take different strengths of carbidopa/levodopa each time throughout the day, increasing the risk for errors.

Documenting a complex schedule—even if well understood—may be difficult and even more challenging in some electronic health records.

Dysphagia is another manifestation of Parkinson's disease and can affect the patient's ability to swallow medications. The symptoms include frequent coughing while drinking and taking medications and a gurgling voice.⁷

SAFE PRACTICE RECOMMENDATIONS

When hospitalized patients with Parkinson's disease experience problems with incorrect timing of drug administration or receive drugs that exacerbate disease symptoms, their stay may be prolonged. In addition, the loss of disease control at the hands of those who should be experts undermines the patient's faith in their health care team. Health care providers should consider the following recommendations to improve the medication management of hospitalized patients with Parkinson's disease.

Expedited reconciliation. Establish an expedited medication reconciliation process upon admission for all patients with Parkinson's disease. Set the goal of obtaining an accurate list of medications within two hours of admission that includes the exact doses and timing of medications that the patient took as an outpatient whenever possible. Consider an automatic pharmacy consultation when patients with Parkinson's disease are admitted to assist with timely medication reconciliation. Some patients with Parkinson's disease have memory impairment, so family members who have close contact with the patient may need to be contacted. This may also require calling the patient's neurologist.

Build a unique schedule. Establish a method and process to create and communicate the patient's individualized medication schedule in order to control symptoms throughout the day. This requires clear communication between the patient-care unit and the pharmacy so patient-specific schedules are not overridden with standard dosing schedules.

Avoid nonformulary delays. To the extent possible, ensure that your formulary provides common Parkinson's disease medications and doses so that drug administration is not delayed while the pharmacy obtains nonformulary medications.

Know the symptoms. Upon admission, obtain information regarding the patient's current symptoms, ability to carry out daily activities, and mental status as a baseline to observe for increasing symptoms potentially due to the effects of drug therapy.

Avoid contraindicated drugs. Some medications alter the brain's dopamine receptors and cause symptoms, while others chemically interact with antiparkinsonian medications and cause side effects. These contraindicated medications (e.g., dopamine blockers; older antipsychotics and antidepressants; certain antiemetics, pain medications, and anesthesia agents) should be avoided.⁸ If the patient is taking selegiline or rasagiline, other medications must also be avoided, for example, meperidine, tramadol, methadone, mirtazapine, St. John's wort, cyclobenzaprine, dextromethorphan, pseudoephedrine, phenylephrine, and ePHEDrine. There are alternative choices within these categories of medications that are safer to use for patients with Parkinson's disease.

Build alerts. Develop strategies to alert prescribers and pharmacists to drug–drug and drug–disease interactions. For example, develop a pop-up warning to alert prescribers and pharmacists when a contraindicated drug is ordered for a patient who is already receiving carbidopa/levodopa and/or selegiline or rasagiline.

Neurology consultation. When patients with Parkinson's disease are hospitalized, consider consulting the patient's neurologist or other specialist to evaluate antiparkinsonian medications to ensure safety. At a minimum, let the patient's neurologist know the patient has been hospitalized. (Only 25% of neurologists are confident they would be contacted if their patients were admitted to the hospital.²) If the neurologist is not consulted, require a clinical pharmacist or expert in Parkinson's disease to review the patient's medications on the first day of admission. If possible, generate a computer alert, triggered by the patient's diagnosis or prescribed drugs, to let the knowledgeable clinician know that a patient has been admitted, thus enabling their involvement early in the course of the admission.³

Manage NPO status. If there is any plan to keep a patient with Parkinson's

disease NPO that would interfere with the patient's unique schedule of medication administration, a neurologist or neurology team should oversee the medication regimen change to avoid complications.

Do not abruptly discontinue medications. Never abruptly discontinue antiparkinsonian medications. Serious reactions, such as neuroleptic malignant-like syndrome, can occur when antiparkinsonian medications are discontinued or the dose of levodopa has been reduced abruptly.⁹ This can result in a high fever, sweating, unstable blood pressure, stupor, muscular rigidity, and autonomic dysfunctions that can be life threatening.

Promote swallowing. When taking medications, patients should be asked to sit upright with their hips flexed at 90 degrees and to remain sitting, if possible, for 45 minutes. They should also be encouraged to swallow twice after taking pills or drinking liquid.⁷ Do not crush or allow the patient to chew extended- or controlled-release medications (e.g., Sinemet CR [carbidopa/levodopa sustained-release tablets, Merck]).

Optimal surgery time. When possible, schedule surgery as early in the day as possible (8 A.M. to 9 A.M. is optimal) for patients with Parkinson's disease to promote best symptom management.¹⁰ Antiparkinsonian medications should be administered as close as possible to the patient's medication schedule pre- and postoperatively, and restarted immediately after surgery.

Focused education. Educate staff regarding the importance of timing with antiparkinsonian medications—emphasize that they must be on time, every time. Focusing education in particular areas, such as the emergency department, orthopedic units, and key medical units, may be the most effective strategy given that many units will have a low census of patients with Parkinson's disease.³ Identify when patient symptoms are not controlled/managed and consult the neurologist. Also remind staff to be alert to the risk of falls.

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The reports described in this column were received through the ISMP Medication Errors Reporting Program (MERP). Errors, close calls, or hazardous conditions may be reported on the ISMP website (www.ismp.org) or communicated directly to ISMP by calling 1-800-FAIL-SAFE or via email at ismpinfo@ismp.org. ■