Parkinson's Foundation

GEDC | THE GERIATRIC EMERGENCY DEPARTMENT COLLABORATIVE
EDUCATE IMPLEMENT EVALUATE

Parkinson's Disease in the Emergency Department Toolkit

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Parkinson's Disease (PD) Education for Emergency Department (ED) Clinicians

PD in the ED

Preventable Harm in the ED for People Living with PD

Up to 33% of people living with PD will require at least one hospital admission a year.[1] ED lengths of stay have been associated with poor patient outcomes for people with PD, such as worsening symptoms and deterioration.[2]

PD symptoms that are not accurately addressed or communicated on admission may slow clinical decision-making and impact patient outcomes.

Set the course for optimal care delivery and shorter length of stay with three steps during triage:

1. Complete a thorough assessment of their PD history as early as possible to get a current symptoms baseline.
2. Ask the patient and their care partner (if present) to determine what symptoms, new or old, are most concerning.
3. Flag concerning symptoms to the broader care team to support safe and quality care delivery.

PD Is Always A Concern, Even When It Is Not The Main Concern

People diagnosed with PD often arrive to the ED for reasons unrelated to their PD, including.

- Pneumonia;
- Urinary tract infections;
- Aspiration pneumonia; and
- Lower extremity trauma.[3]

Keep in Mind

Medication dose delays can cause loss of symptom control. This can lead to:

- Increased risk for amplified tremor, falls, injury and other adverse events;
- Motor deterioration that lasts beyond hospitalization; and
- Added difficulty completing some diagnostic tests.

Some PD symptoms can look like other issues.

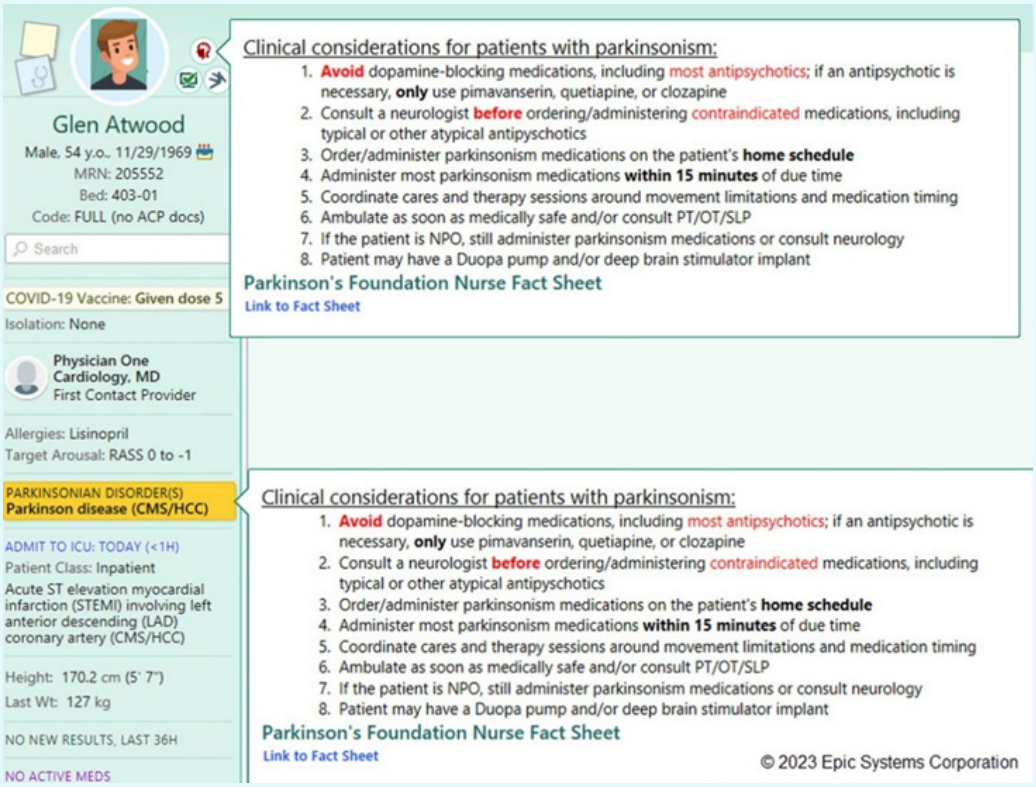
- Stroke (e.g., muffled speech, masked facial expression, inability to follow directions and weak extremities).
- Gastrointestinal obstructions (e.g., constipation).

Identifying PD in the ED: Why it Matters

Since people diagnosed with PD often arrive to the ED for reasons unrelated to their PD, ED clinicians may not immediately recognize them as PD patients. This presents a problem as any designated interventions may not go into effect if the patient is not identified as having PD.

What Should Happen	What Should Not Happen
PD Needs are Recognized and Addressed in Hospital Care **Result:** Care Provided with Attention to PD Needs, Better Patient Outcomes	**PD Needs Are Not Recognized and Addressed in Hospital Care** **Result:** Care Provided without Attention to PD Needs, Worse Patient Outcomes
Patient chart identifies patient with PD upon admission	**Patient chart does not identify patient with PD** upon admission
Pharmacy alerted to complete med reconciliation and/or administer first dose of PD meds	**Pharmacy is not alerted to complete med reconciliation** and/or administer first dose of PD meds
Provider orders meds according to the **patient's at-home schedule**	Provider orders meds according to the **preset hospital schedules**
BPAs redirect orders for contraindicated meds to appropriate alternatives	**No BPAs implemented to redirect orders for contraindicated meds** to appropriate alternatives
Patient may be discharged sooner and and is more likely to be discharged home because avoidable complications were less likely to occur	**Patient may be in the ED longer and admitted** because avoidable complications were more likely to occur

Identifying PD in the ED: How to Implement



For Epic Users[4]

A build package is available to support identification of PD patients through a default Storyboard icon and banner. This enables clinicians to quickly recognize that a patient has a parkinsonian disorder, as shown below:

For more information about importing this package within Epic, refer to the 238334-Identify Patients with Parkinsonian Disorders topic.

For Non-Epic Users or Those Who Would Like to Create a Custom Epic Build

Consider implementing the high-level approach developed by Hackensack Meridian Health (HMH) to identify PD patients, in collaboration with your IT team and EHR representative. This approach was the basis for the Epic build described above.

- Include PD in the problem list
- Flag prescriptions of Antiparkinson and Related Therapy Agent
  - Possible exclusion criteria: Diagnosis of Restless Legs Syndrome (RLS) on the problem list
- Detect keywords including "Parkinson" in any note
  - While this does result in the inclusion of atypical parkinsonism syndromes, as well as occasional patients that may not have PD, the increased sensitivity was felt important to avoid erroneously missing potential patients in the ensuring protocol.

PD Care Standards

PD in the ED: Three Essential Care Standards

In the ED, the best thing you can do to prevent complications and unnecessary admission amongst people with PD is to address medication-related needs.

We've outlined three essential strategies below, derived from The Parkinson's Foundation Hospital Care Recommendations. Care team members accountable for advancing each strategy may vary based on resource availability. Implementation may be phased to ensure feasibility and acknowledge stepwise improvement.

CARE STANDARD	WHY IT MATTERS	ALIGNMENT*	ED IMPLEMENTATION
Timely Medication Administration: All PD medications are administered within 15 minutes of patients' at home regimen, 100% of the time.	PD symptoms are tightly managed via prescribed patient schedules. Medication administration timeliness can prevent clinical harm.[4]	**GEDA:** B.1 Enhance Med Rec **AFHS 4Ms:** Medication: Review all medications **CMS Measure:** Responsible medication management	Expedite medication reconciliation and the administration of the first dose of PD medications
Custom Medication Orders: All PD medications are ordered in a custom fashion, according to patients' at-home regimen.	Potentially severe complications are caused by deviations in schedules and doses, including worsening symptoms and longer length of stay.	**GEDA:** B.2 Guidelines to minimize potentially inappropriate medications use **AFHS 4Ms:** Medication: Review all medications **CMS Measure:** Responsible medication management	Remove standard ordering options in the EHR for PD medication (e.g., QID, BID) so that custom input is the default.
Avoid Harmful Medications: Potentially harmful medication events are eliminated, particularly in dopamine-blocking medications, agents for pain, and sedatives.	Certain common medications (e.g., those to treat migraines, stomach issues, and delirium)[5] can worsen PD symptoms due to their interaction with PD medications and the PD process.	**GEDA:** B.2 Guidelines to minimize potentially inappropriate medications use **AFHS 4Ms:** Medication: avoid high-risk medications **CMS Measure:** Responsible medication management: Identify potentially inappropriate medications	Implement a contraindicated medication BPA Alert that redirects prescribers to more appropriate medication options

*GEDA, AFHS 4Ms, & CMS Measure
GEDA: Geriatric Emergency Department Accreditation
AFHS 4Ms: Age Friendly Health Systems 4Ms (What Matters, Medication, Mobility and Mentation)
CMS Measure: Centers for Medicare & Medicaid Services Age Friendly Hospital Measure, requiring reporting for all participants in the Hospital Inpatient Quality Reporting (IQR) Program

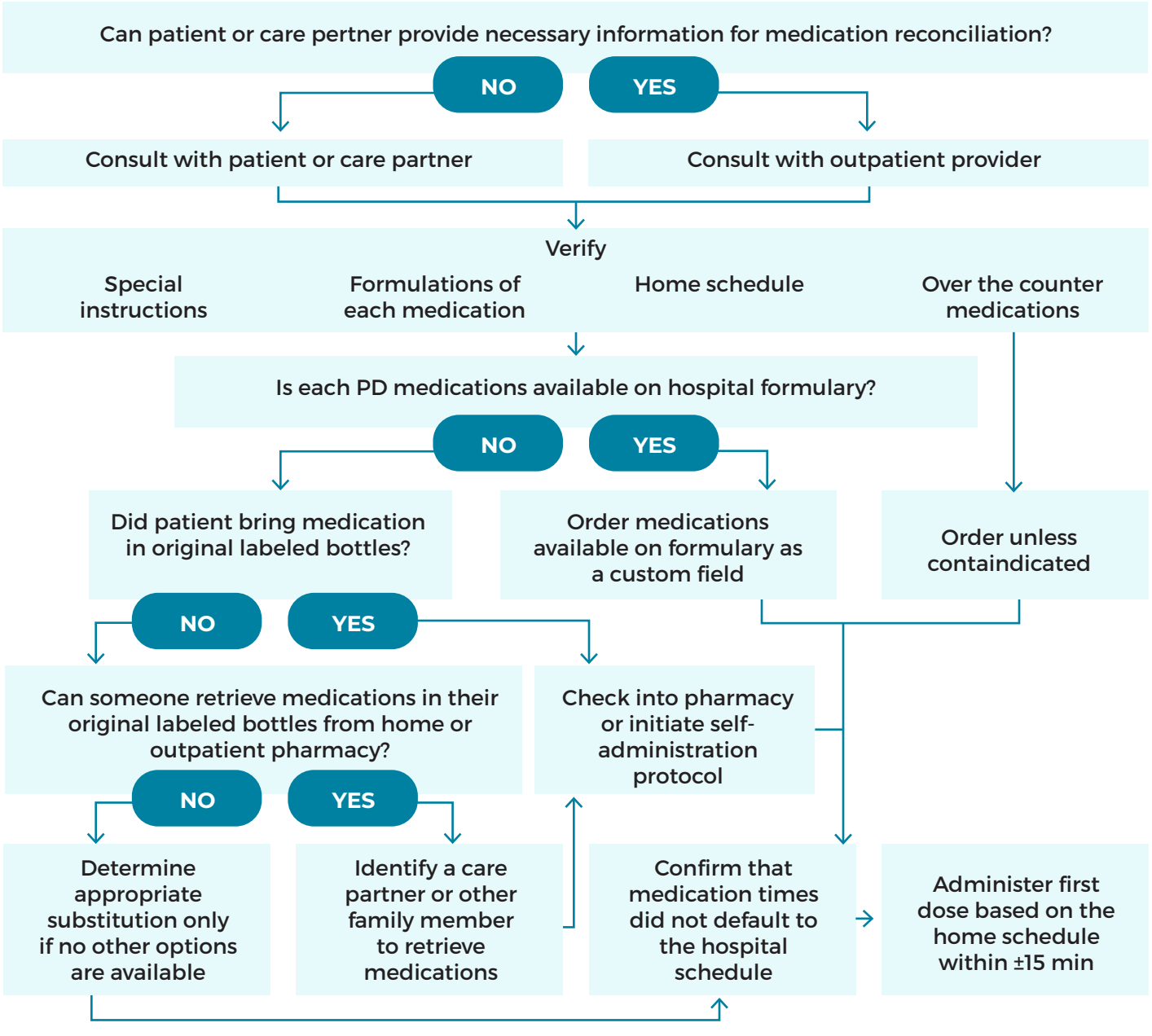
Tools and Approaches to Implement Care Standards

PD-Enhanced Medication Reconciliation

Consider utilizing the following workflow as a template in the Electronic Health Record (EHR). In summary, the workflow ensures:

- Patient, care partner, or the outpatient provider provides the requisite information to complete a medication reconciliation.
- Care team member completes the medication reconciliation, verifying home schedule, over-the-counter medications, formulations of each medication, special instructions, and contraindications.
- Care team member determines how PD medication will be provided, administered, and at what frequency.

Figure 1. Medication Reconciliation Workflow



Case Study:

Timely Medication Administration at Upstate University Hospital

Information Management Technology (IMT) Alert to Improve Timely Administration of Carbidopa-Levodopa

Background

- A case was brought to the attention of the Geriatric Emergency Medicine-Care Advisory Board:

  A patient with PD spent 12 hours in the ED before being admitted. Despite care partner's advocacy that PD meds were needed, multiple doses were missed. The patient experienced panic and anxiety, extended length of stay, and needed to be calmed for hours.

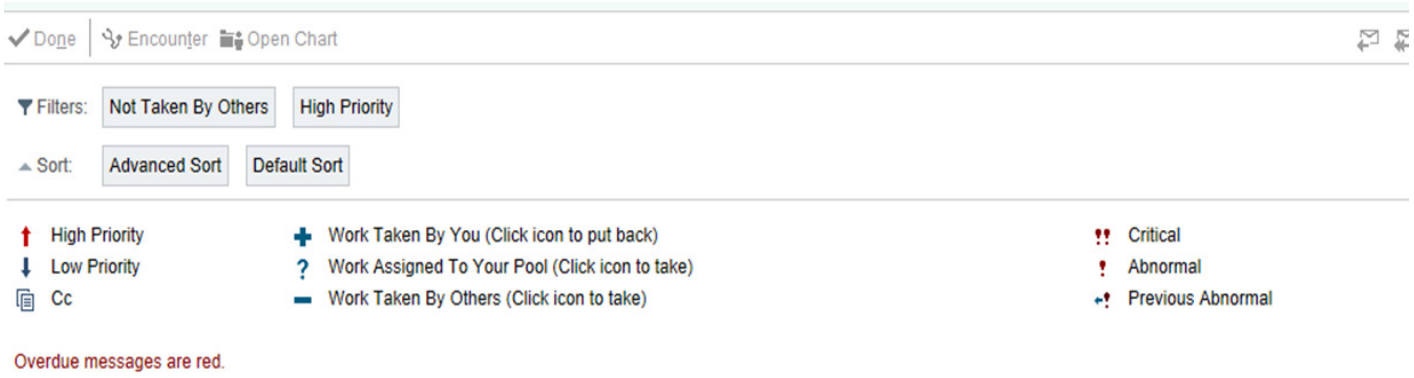
- To address this, the SUNY Upstate Team implemented an IMT alert in the ED to improve timely administration of carbidopa-levodopa.

Supports GEDA ED Care Process B.1: Care Process for Medication Reconciliation to be Performed by Pharmacist or Pharmacy Technician

Example: IMT Alert

Parkinson's Patient in ED 1 unread, 1 total

Status	MSG Date	MSG Time	Patient	Subject
NEW	1/17/2026	2:05 OM	ED	Parkinson's Patient in ED



Workflow

IMT alert is received by ED Pharmacist (in basket)

ED pharmacist conducts medication history with patient and/or care partner

ED pharmacist obtains the ED provider's consent to order CL and other medications for PD

ED pharmacist orders the patient's PD medications for when next dose is due

Medication is administered on time

Impact[6]

METRIC	BASELINE	POST IMPLEMENTATION
Patients receiving carbidopa/levodopa in the ED increased nearly threefold	32%	91%
Average length of stay was shortened by nearly 40%	5.4 days	3.3 days
Use of injectable antipsychotic or benzodiazepine decreased by over 40%	6.4%	3.6%

Measuring Impact

METRIC	CALCULATION METHODOLOGY
Percentage of patients receiving carbidopa/levodopa (CL) in the emergency department (ED)	• **Numerator:** # of patients admitted through ED to hospital who received CL in the ED • **Denominator:** # of eligible patients admitted through ED to hospital that are on carbidopa/levodopa (CL) • For both groups, exclude patients admitted to ICU • Total x100
Average length of stay (LOS)	• Comparison of LOS in days between patients admitted through ED to hospital who received CL in the ED and patients admitted through ED to hospital who did not receive CL in the ED • For both groups, exclude patients admitted to ICU • Length of stay was analyzed using T-test
30-day readmission rates	• Comparison of 30-day readmission rate (yes/no) between patients admitted through ED to hospital who received CL in the ED and patients admitted through ED to hospital who did not receive CL in the ED • For both groups, exclude patients admitted to ICU • 30-day readmission was analyzed as a binary event (yes/no) using a Chi-square test
Use of injectable antipsychotic	• Comparison of # of patients needing injectable antipsychotic between patients admitted through ED to hospital who received CL in the ED and patients admitted through ED to hospital who did not receive CL in the ED • For both groups, exclude patients admitted to ICU • Use of injectable antipsychotic was analyzed as a binary event (yes/no) using a Chi-square test
Use of injectable benzodiazepine	• Comparison of # of patients needing injectable benzodiazepine between patients admitted through ED to hospital who received CL in the ED and patients admitted through ED to hospital who did not receive CL in the ED • For both groups, exclude patients admitted to ICU • Use of injectable benzodiazepine was analyzed as a binary event (yes/no) using a Chi-square test

How to Improve Timely Administration

Upstate University Hospital Implementation Model

This guide outlines an approach to implementing an IMT Alert to improve timely administration of carbidopa-levodopa (CL). The protocol, successfully used by Upstate University Hospital ED, is aimed at reducing delays in administration of the first dose of PD medications in the ED, avoiding missed doses entirely.

Step 1:

Develop the IMT alert for CL with pharmacy and IMT teams.

- EHR should flag when a patient enters the system with CL in their medication history and send an In Basket alert.

Step 2:

Garner stakeholder support to drive implementation.

Key professionals:

- Geriatric ED Physicians
- ED Pharmacists
- ED Nurse Educator

Step 3:

Educate providers and leverage automated dispensing cabinets (ADCs) to support implementation.

- Implement an educational initiative to raise awareness among ED providers.
- Add CL medications to ADCs in the ED to promote timely medication administration.

Step 4:

Monitor and Evaluate Usage

- Use EHR reporting tools to track the timeliness of PD medication administration in the ED outcomes.
- Discuss IMT alert and outcomes at appropriate committees.

Step 5:

Sustain implementation.

- Ongoing monitoring
- Conduct feedback sessions with unit staff
- Adjust training as needed

Case Study:

Custom Medication Orders at Hackensack Meridian Health

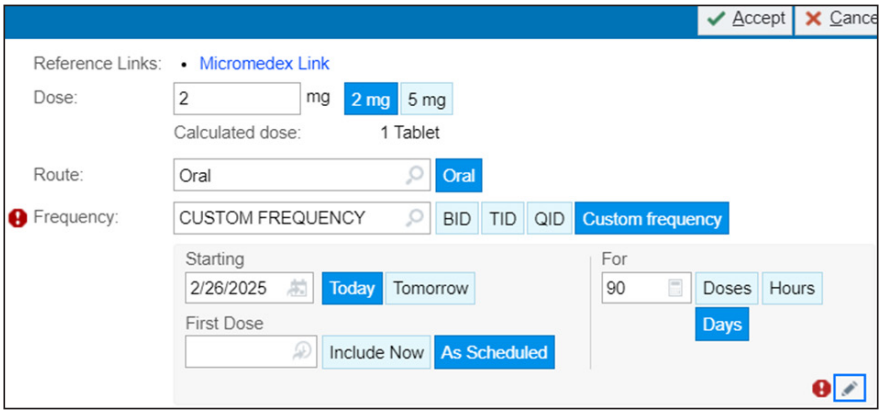
Custom Medication Order Entry Protocol for PD Medications.

Background

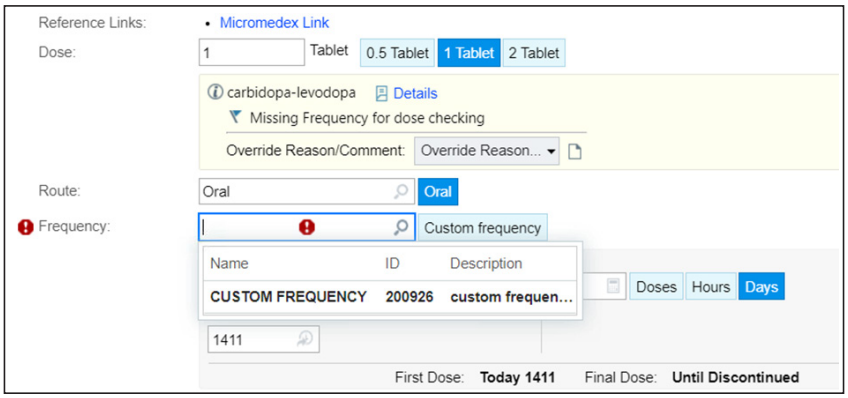
- Hackensack Meridian Health (HMH) developed a custom medication order entry protocol to ensure hospital administration of a common PD medication — carbidopa-levodopa — matched patients' at-home regimens.
- In a recent study, HMH evaluated whether custom medication orders improve the timely administration of PD medications compared to default non-custom entries across hospital units, resulting in an increased rate of on-time medication administration.
- Since publishing, HMH has removed the default prescription order options, offering only custom frequency as an option, resulting in greater compliance with custom ordering.

Supports GEDA ED Care Process B.2: Guidelines to Minimize Potentially Inappropriate Medication Use.

Example: Custom Ordering Option



Example: Custom Ordering Requirement



Workflow

PD medication order is initiated

Ordering clinician asks patient about their at-home medication schedule

Ordering clinician selects “Custom Frequency” rather than “BID/TID/QID” OR ordering clinician is required to input a custom frequency

Ordering clinician inputs custom frequency that matches the patient’s at-home medicaiton schedule

Medication is administered on time according to the custom frequency

Impact[7]

METRIC	CUSTOM ORDERING OPTION	CUSTOM ORDERING REQUIRED
PD medication orders placed using customization	45.23%	90-100%
Likelihood of being administered on time (compared to non-custom orders)	1.64	Pending additional analysis
Median Dose Delay (compared to non-custom orders)	3.06 minutes less	Pending additional analysis

Measuring Impact

METRIC	CALCULATION METHODOLOGY
PD medication orders placed using customization	• **Numerator:** # of patients with PD meds ordered as custom • **Denominator:** total # of PD patients treated
Likelihood of being administered on time (compared to non-custom orders)	• Difference in the time recorded when the medication was administered by the nurse v. the actual due time • Medication administration within 1 minute of due time was analyzed as a binary event (yes or no) using Fisher's exact test
Median Dose Delay (compared to non-custom orders)	• Median difference in time-to-medication administration relative to the due time in the custom group v. the non-custom group

How to Enable Custom Medication Orders

Hackensack Meridian Health Implementation Model

Overview

This guide outlines an approach to implementing custom medication order entries for hospitalized patients, with a focus on PD. The protocol, successfully used by Hackensack Meridian Health, is aimed at ensuring the timely administration of medications by aligning hospital schedules with patients' home regimens.

Step 1:
Identify the Need

- Review current medication administration errors and delays among patients with complex medication schedules (e.g., PD patients).
- Define the risk of complications due to mistimed medications.
- Prioritize conditions with narrow therapeutic windows and significant timing sensitivity.

Step 2:
Design the Custom Order Protocol

- Develop a standardized process to enter custom administration times in the EHR (Electronic Health Record).
- Allow providers to manually enter administration times that mirror the patient's home schedule.
- Differentiate from default orders (e.g., BID/TID) to enable individualized care.

Step 3:
Obtaining Approval

- Present the proposed protocol to internal invested partners, including pharmacy/therapeutics committees, nursing leadership, and quality/safety teams.
- Align with institutional medication safety policies and EHR configuration standards
- Incorporate feedback from frontline staff and invested partners
- Obtain final approval from administration and appropriate governing bodies.

Step 4:
Implement Training and Education

- Train all prescribing providers on the importance of custom orders.
- Use case examples and data to demonstrate the impact on patient safety.
- Provide unit-based support with clinical pharmacists and PD care champions.

Step 5:
Monitor and Evaluate Usage

- Use EHR reporting tools to track the proportion of custom v. non-custom orders over time.
- Analyze timeliness of medication administration relative to due time.
- Conduct feedback sessions with unit staff and adjust training as needed.

Case Study:

Avoiding Harmful Medications at University of Rochester Medical Center

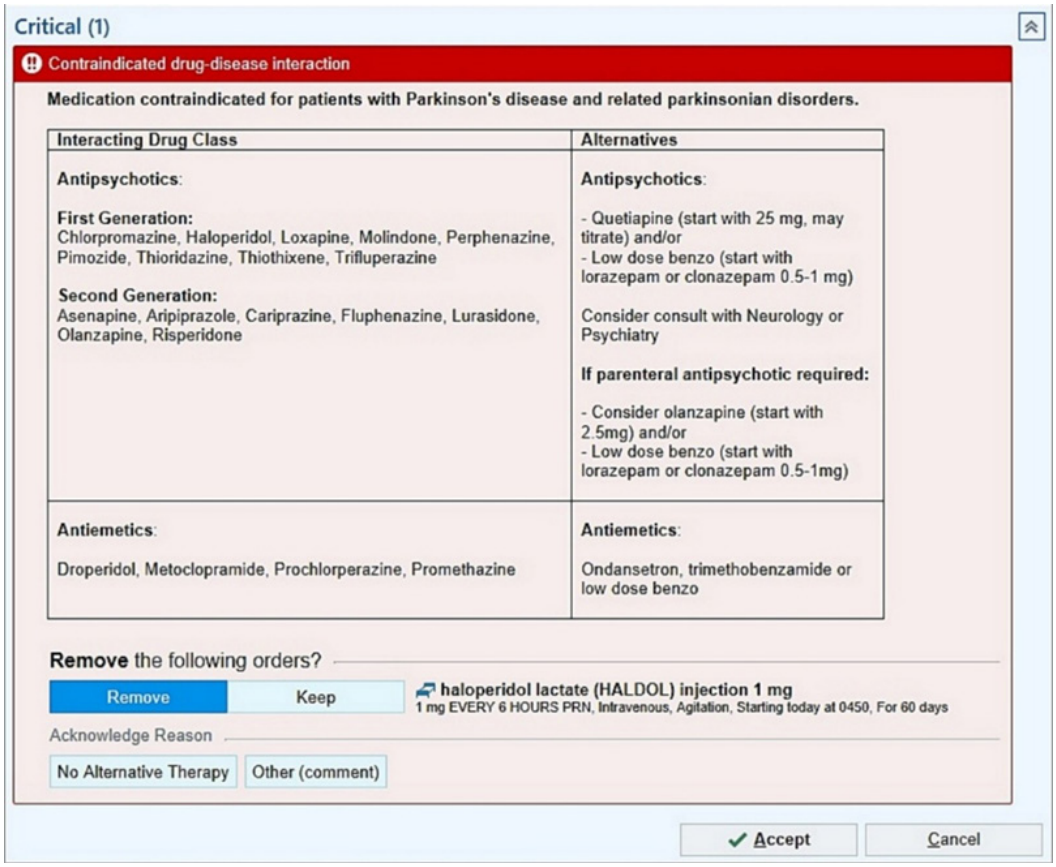
Best Practice Advisory Alert to Reduce Administration of Contraindicated Medications

Background

- While in the hospital (ED or inpatient), PD patients may be administered dopamine-blocking agents (DBA), which are contraindicated as PD patients have an inherent dopamine deficiency. Serious complications can arise from the use of this drug class in PD patients, including worsening motor symptoms, mental status changes, longer hospital stays, need for a higher level of care, and potentially death.
- A best practice advisory (BPA) alert was launched at the University of Rochester Medical Center, alerting the provider when a contraindicated medication is ordered for a patient with PD or a related disorder.

Supports GEDA ED Care Process B.2: Guidelines to Minimize Potentially Inappropriate Medication Use.

Example: Disease-Drug Warning



Workflow

Dopamine-blocking agent order is initiated

BPA Alert is triggered

Ordering Clinician selects to remove or keep the order.

If Order is Removed: Place order for alternative as suggested in the BPA or consult specialist

If Order is Kept: Select reason for keeping despite potential contraindication.

Order reviewed by pharmacy team based on internal protocol

Impact[8]

METRIC	BASELINE	POST IMPLEMENTATION
Orders of contraindicated medication (DBA) decreased by nearly 60%	41.5%	17.6%
Administration of contraindicated DBA decreased by nearly 50%	16%	8.8%

Measuring Impact and Outcomes

METRIC	CALCULATION METHODOLOGY
Orders of contraindicated medication (DBA) decreased by nearly 60%	• **Numerator:** Original % of admissions with orders for contraindicated medications – New % of admissions with orders for contraindicated medications • **Denominator:** Original% of admissions with orders for contraindicated medications • All x100
Administration of contraindicated DBA decreased by nearly 50%	• **Numerator:** Original % of admissions with administrations of contraindicated medication - New % of admissions with administrations of contraindicated medication • **Denominator:** Original % of admissions with administrations of contraindicated medication • All x100

How to Avoid Contraindicated Medications

University of Rochester Medical Center Implementation Model

Overview

There are two primary approaches to implementing a BPA Alert for medications contraindicated in PD. Below we outline the pros/cons of each and a basic how-to guide for whichever path is most feasible in your institution.

Approach A. Use of Existing Drug-Disease Interaction BPA

Pros

- Easy to implement pre-existing warnings and content (via third-party vendors)
- BPA does not need to be created, simply turned on (skip step 3 below)

Cons

- Enables a large dataset, may include warnings for other conditions
- May require recategorization of some medications (see Note)

Approach B. Custom Disease/Drug Interaction BPA

Pros

- Once enabled, will not enable other disease-drug warnings
- Customizable list of contraindicated medications and safe alternatives

Cons

- Higher implementation burden and complexity
- May require additional resources

Step 1:
Identify Stakeholders

- IT professionals to create BPA
- BPA Committee to approve BPA

Step 2:
Engage Stakeholders

- Build a case for change
- Present to the BPA committee

Step 3:
Create the BPA

- Leverage existing internal BPAs to expedite process.

Step 4:
Launch the BPA

- May require a pilot of "soft launch" to demonstrate impact/need.

Step 5:
Sustain implementation

- Conduct ongoing monitoring and ED staff education.

Note: *Cleveland Clinic partnered with First Databank to update their list in 2024 to include all contraindicated medications. Users of other third-party vendors are encouraged to connect with the Parkinson's Foundation to follow a similar process so that prescribers are not being directed from one contraindicated medication to another.*

How to Support PD Patients through Discharge from the ED

To ensure continuity of care for PD patients, consider the following upon discharge.

Have patients been connected to appropriate services to address PD-specific needs? *Aligned with GEDC E6*

- Outpatient rehabilitation (physical therapy, occupational therapy, speech language pathology)
- Outpatient dietary/nutrition services
- Community exercise and other support groups

Do patients and their care partners have the information required to manage their health? *Aligned with GEDC E3*

- Education on medication and any changes during hospitalization
- Information for follow-up with their primary PD care provider

Do other providers have the information required to deliver quality, coordinated care? *Aligned with GEDC E1*

- Discharge summary is shared with primary PD care provider
- If patient is transitioning to another care facility, medication instructions (e.g., dosage, timing) are shared with that care facility

References

[1] *Parkinsonism & Related Disorders, 2020*

[2] *International Emergency Nursing, 2022*

[3] *Movement Disorders, 2011*

[4] *Frontiers in Aging Neuroscience, 2023*

[5] *Frontiers Aging Neuroscience, 2025*

[6] *Senior Care Pharmacist, 2024*

[7] *Frontiers Aging Neuroscience, 2023*

[8] *Frontiers Aging Neuroscience, 2023*

The Parkinson's Foundation Hospital Care Initiative

The Parkinson's Foundation Hospital Care Initiative aims to eliminate preventable harm and promote higher reliability in care for people with Parkinson's disease (PD) in the hospital, including care through the emergency department, inpatient care, and outpatient procedures.

Visit **Hospital Care Initiative** to learn more about the Parkinson's Foundation Hospital Care Initiative:

- **Hospital Care Standards**
- **Hospital Care Learning Collaborative**
- **Current projects that are generating evidence**

Resources

Parkinson's Foundation Hospital Safety Guide

Podcast Episode 155: The Evolution of the Parkinson's Foundation Hospital Care Initiative with Dr. Peter Pronovost

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