



## Problem Statement

During a 6 month review, 5.6% of DaTscan patients no-showed for their appointment and 32% were inadequately prepared on the day of their exam. Inconsistent patient preparation results in waste of an expensive radio-pharmaceutical for the department, suboptimal interpretation or delayed diagnosis and decrease of patient satisfaction.

## Background Statement

DaTscan exams are an advanced nuclear medicine study performed using a radioactive tracer in conjunction with a SPECT scan to determine whether a patient has Parkinson's disease by measuring the amount of dopamine available in a person's brain. Multiple medications interrupt the uptake of the radiotracer in DaTscans and must be held prior to the examination to assure accurate test results.

## SMART Goal

To decrease inadequately prepared DaTscan patients from 32% to 16% and reduce patient no show / cancellation rate from 5.6% to 2.8% by June 2021.

Current Outpatient Medications	Instructions
• acetaminophen (ACETAMINOPHEN)	650 mg, Oral, 4 TIMES DAILY PRN
• allopurinol (ZYLORPRIM) 100 MG tablet	Take one tablet by mouth once daily
• atorvastatin (LIPITOR) 20 MG tablet	Take one tablet by mouth every night
• benzotropine (COGENTIN)	1 mg, Oral, DAILY
• buPROPion (WELLBUTRIN XL) 150 mg 24 hr tablet	Take one tablet by mouth once daily before breakfast - (swallow whole- do not crush, break, chew)
• CALCIUM CITRATE + D3 MAXIMUM 315-250 MG-UNIT per tablet	Take one tablet by mouth twice daily
• clotrimazole (LOTRIMIN) 1% cream	Apply topically twice daily to groin rash
• clozapine (CLOZARIL) 200 mg tablet	Take one tablet by mouth nightly
• cyanocobalamin	500 mcg, Oral, DAILY
• divalproex (DEPAKOTE ER) 500 mg 24 hr tablet	Take two tablets by mouth every night (swallow whole- do not crush, break or chew)
• docusate sodium (COLACE) 100 MG capsule	Take 2 BID and may HFLS.
• FIBER-LAX 625 MG tablet	Take two tablets by mouth daily
• mirabegron (MYRBETRIQ)	25 mg, Oral, DAILY
• Misc. Devices (CLASSICS ROLLING WALKER)	1 device, Does not apply, DAILY
MISC	
• multi-vitamin (THERAGRAH) per tablet	Take one tablet by mouth once daily
• omega-3 acid ethyl esters (LOVAZA) 1 GM capsule	Take two capsules by mouth twice daily - swallow whole, do not crush or chew
• SENNA 8.6 MG tablet	Take one tablet by mouth once daily

PI instructed to hold medication 2 days prior to scan. Yes, spoke with Michelle nurse at Wesley Garder 2nd floor. Will hold Benztropines and Bupropion. Will also arrange transportation for 9am arrival and 1 return for scan.

Arrival date and time: 1/18/2022 at 9am and 1pm.

Instructed patient on below:  
 • After you arrive you will be screened by our Nuclear Medicine staff  
 • You will be given a thyroid protecting medication called Iugol  
 • 30 minutes after your dose of Iugol you will receive an IV injection of DaTscan  
 • There will be a four hour wait time before your imaging takes place so you can leave and come back as instructed. There are no restrictions during this 4 hour time other than certain radiology tests.  
 • You will return back to have your DaTscan study performed. This will take approximately 45 minutes

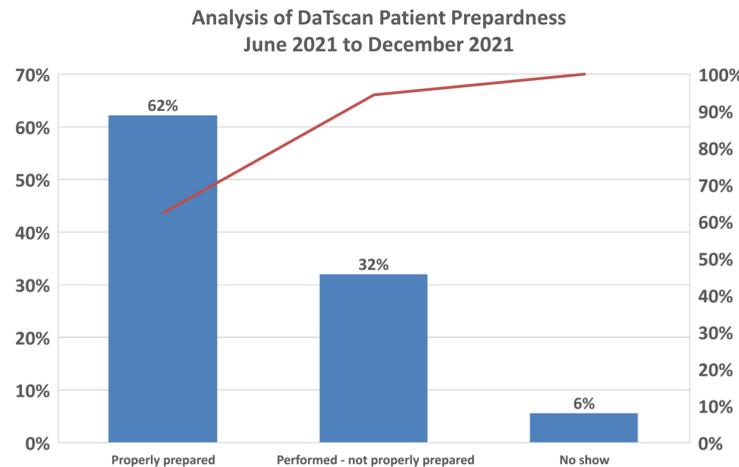
**DaTscan MEDICATION LIST:**  
 Medications that need to be held/stopped 2 days PRIOR to DaTscan exam:  
 CNS/stimulants:  
 cocaine, Amphetamine, Methamphetamine  
 Drugs for anorexia and obesity:  
 Phentermine(Ionamin), mazindol, phenylpropanolamine, Norephedrine  
 Drugs for ADHD and narcolepsy:

Figure 1

## Analysis

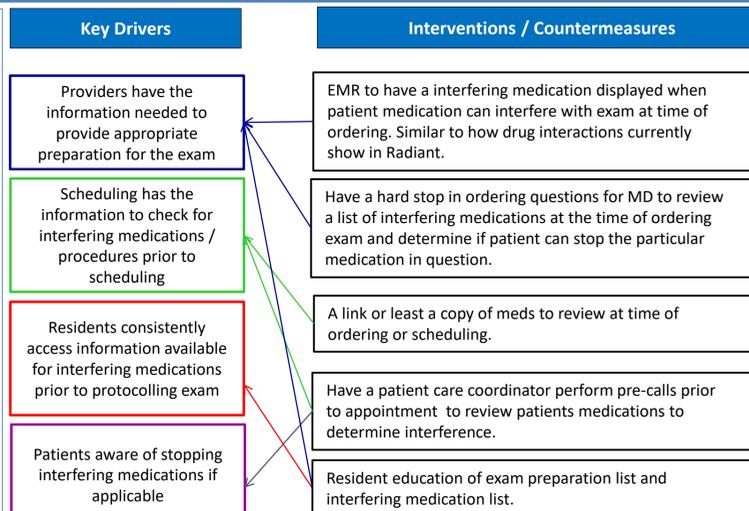
A root cause analysis was performed using by evaluating the current workflow for all DaTscan patients and interviewing referring providers. Patients were surveyed, patient preparedness was tracked and monitored. Several contributing factors were determined why patients were unprepared for their exams:

- Referring providers, scheduling staff and patients were unaware of required preparation and medications that interfered with the study.
- DaTscan order set in EMR did not prompt ordering physician to withhold medications
- Patients were unaware of appointment due to lack of communication and appointment reminders.



## Interventions

- Figure 1 demonstrates a standardized pre-call check list for DaTscan patients. The standard workflow was implemented for nursing pre-calls for DaTscan exams to review medications and discuss exam preparation and arrival times.
- Imaging informatics and EMR designers added a pop up interfering medication list in the EMR when DaTscans exams were ordered to alert ordering providers that certain medications may interfere with this exam (Figure 2). The ordering providers were able to determine if the patient medications could be safely withheld or if another imaging exam would be more appropriate.
- A reference list of interfering medications (Figure 3) was distributed for all referring providers and radiology residents on service. The radiology residents reviewed medications with the patients immediately prior to exam and made the final determination that exam could be performed.



### Medications that need to be held/stopped 2 days PRIOR to DaTscan exam:

- CNS/stimulants:** cocaine, Amphetamine, Methamphetamine
- Drugs for anorexia and obesity:** Phentermine(Ionamin), mazindol, phenylpropanolamine, Norephedrine
- Drugs for ADHD and narcolepsy:** Methylphenidate
- Anti-depressants/Anxiety:** Bupropion, Sertraline, Amoxapine, Buspirane, Selegiline, Paroxetine, Citalopram
- Anticholinergics:** Benztropine

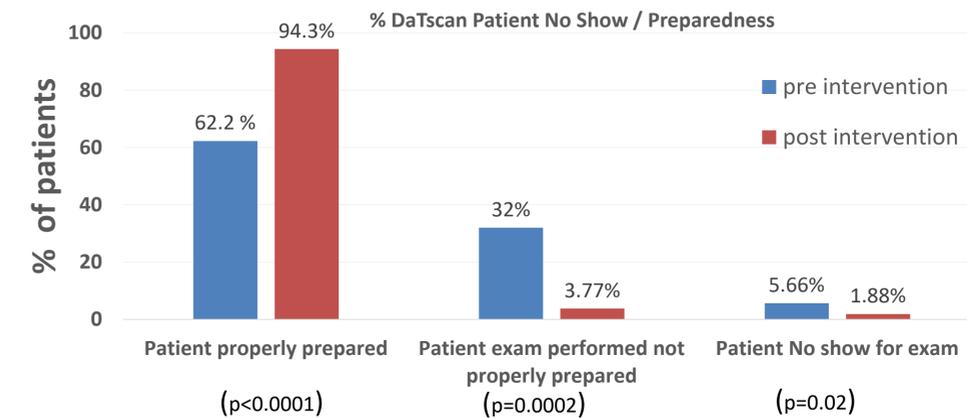
### The following medications do not need to be stopped:

- Levodopa and similar combination drugs:** Levodopa (L-DOPA), Co-beneldopa (Madopar), Co-careldopa (Sinemet)
- Dopamine agonists:** Pergolide (Celence), Bromocriptine (Parlodel), Isuride, Apomorphine (APO-go, Britaject), Ropinirole (Requip), Pramipexole (Mirapexin)
- Anticholinergics:** Biperiden (Akineton) Procyclidine (Arpicolin, Kemadrin), Orphenadrine (Bioiphen), Trihexyphenidyl/Benzhexol(Broflex)
- MAO-B, COMT Inhibitors:** Eldepryl, Zelapar, Entacapone (Comtess)

Figure 3

Figure 2

## Results



## Discussion

From January 2021 to June 2021, the number of inadequately prepared patients for DaTscan decreased from 32% to 3.8% (89% decrease) after implementing stated interventions. The number of patients no shows decreased from 5.6% to 1.9% (66% decrease). P values confirm that implemented interventions resulted in statistically significant improvement.

## Conclusion

Patient scans were more confidently interpreted due to the new consistency with which interfering medications were held prior to the exam. Patients were no longer regularly rescheduled after arriving for their appointments improving patient experience and reducing no shows. The project shows the value of how highly reliable solutions when implemented, can effectively result in dramatic and consistent improvement in the quality of the clinical service provided while also saving money for the enterprise by reducing waste. **The average radiotracer expense for one DaTscan exam is \$2,570.** The total number of combined no show/unprepared patients prior to interventions resulted in \$102,800 in wasted pharmaceutical costs annually. **The 84% waste reduction created through this project yielded an \$86,350 annual cost savings.** Additionally, the Imaging Department benefited by utilizing time slots and associated technologist resources more efficiently and effectively.

Quality improvement in radiology does not always require a financial burden to make a positive impact. By ensuring standardized patient preparation and communication, optimal and timely diagnosis for DaTscan patients was obtained more consistently while reducing waste, improving scheduling efficiency, and our patient's experience.