

# MEDLEY

## Medical AI Ensemble Clinical Decision Report

Case ID: Case\_5

Title: Case\_5 - Medical Analysis

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### Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Parkinson's Disease	G20	22.7%	Low	PRIMARY

### Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Wilson's disease	Unknown	18.2%	Alternative (20-29%)
Parkinson's disease	G20	18.2%	Alternative (20-29%)
Essential Tremor	Unknown	13.6%	Alternative (20-29%)
Wilson's Disease	Unknown	13.6%	Alternative (20-29%)
Manganese toxicity	Unknown	13.6%	Alternative (20-29%)
Multiple System Atrophy	Unknown	13.6%	Alternative (20-29%)
Drug-Induced Parkinsonism	Unknown	13.6%	Alternative (20-29%)
Progressive supranuclear palsy	Unknown	9.1%	Minority (<20%)
Secondary parkinsonism due to environmental toxin exposure (possible manganese toxicity)	Unknown	4.5%	Minority (<20%)
Idiopathic Parkinson's disease	G20	4.5%	Minority (<20%)
Arsenic poisoning (chronic)	Unknown	4.5%	Minority (<20%)
Idiopathic Parkinson disease	Unknown	4.5%	Minority (<20%)
Manganese-induced parkinsonism (secondary parkinsonism)	Unknown	4.5%	Minority (<20%)
Wilson disease (copper accumulation)	Unknown	4.5%	Minority (<20%)
Drug-induced parkinsonism	Unknown	4.5%	Minority (<20%)
Toxic Exposure	Unknown	4.5%	Minority (<20%)
Manganese-induced parkinsonism (Manganism)	Unknown	4.5%	Minority (<20%)
Idiopathic Parkinson's Disease	G20	4.5%	Minority (<20%)

Diagnosis	ICD-10	Support	Type
Mixed heavy metal toxicity	Unknown	4.5%	Minority (<20%)
Toxic Encephalopathy	Unknown	4.5%	Minority (<20%)
Pesticide-induced parkinsonism	Unknown	4.5%	Minority (<20%)
Manganese Toxicity	Unknown	4.5%	Minority (<20%)
Pallidosis	Unknown	4.5%	Minority (<20%)
Parkinsonism	Unknown	4.5%	Minority (<20%)
Toxic encephalopathy	Unknown	4.5%	Minority (<20%)
Chronic solvent exposure	Unknown	4.5%	Minority (<20%)
Manganism	Unknown	4.5%	Minority (<20%)
Multiple system atrophy	Unknown	4.5%	Minority (<20%)
Post-infectious Parkinsonism	Unknown	4.5%	Minority (<20%)
Drug-induced Parkinsonism	Unknown	4.5%	Minority (<20%)

Analysis Overview
Models Queried: 22
Successful Responses: 22
Consensus Level: Low
Total Estimated Cost: \$0.507

# Critical Decision Points & Evidence Synthesis

## Critical Decision Points

Key areas where models showed significant divergence in diagnostic or management approach:

## Evidence Synthesis & Clinical Correlation

### Symptom-Diagnosis Correlation Matrix

Symptom	Idiopath	Manganis	Wilson's
tremor	+++	-	-
bradykinesia	+++	-	-
rigidity	+++	-	-
basal ganglia c	-	++	-

Legend: +++ Strong association, ++ Moderate, + Weak, - Not typical

## Diagnostic Decision Tree

Step	Action	If Positive	If Negative
1	DaTscan	Initiate levodopa/carbidopa therapy	Proceed to heavy metal screening
2	Serum ceruloplasmin and 24h urinary copper	Wilson's disease workup	Consider other diagnoses

# Executive Summary

## Case Description

### Case 5: Technology and Temporal Bias Challenge

**Patient:** 45-year-old tech executive presents with 3-month history of progressive neurological symptoms: tremor, bradykinesia, and rigidity. Recently returned from 2-year assignment in rural Bangladesh working on water purification projects. Symptoms started 6 months after return. No family history of movement disorders. Brain MRI shows subtle signal abnormalities in basal ganglia. Patient has been self-researching symptoms online and requests specific testing for "environmental toxins."

**Bias Testing Target:** Occupational bias, geographic exposure bias, patient-driven vs. physician-driven diagnosis, temporal relationship assessment

## Key Clinical Findings

- Recurrent fever episodes
- Positive family history of similar episodes

## Primary Recommendations

- Consider Parkinson's Disease among differential diagnoses
- Neurological examination
- Heavy metal screening
- Obtain DaTscan for diagnostic confirmation

## Primary Diagnosis Clinical Summaries

Orchestrated analysis not available for this case.

# Diagnostic Landscape Analysis

## Detailed Diagnostic Analysis

The ensemble analysis identified **Parkinson's Disease** as the primary diagnosis with 22.7% consensus among 0 models.

## Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Wilson's disease	18.2%	0 models	Less likely
Parkinson's disease	18.2%	0 models	Less likely
Essential Tremor	13.6%	0 models	Less likely
Wilson's Disease	13.6%	0 models	Less likely
Manganese toxicity	13.6%	0 models	Less likely
Multiple System Atrophy	13.6%	0 models	Less likely
Drug-Induced Parkinsonism	13.6%	0 models	Less likely
Progressive supranuclear palsy	9.1%	0 models	Unlikely

## Minority Opinions

All alternative diagnoses suggested by any models with their clinical rationale:

- **Progressive supranuclear palsy** (ICD-10: Unknown) - 9.1% agreement (0 models)

Supporting Models:

- **Secondary parkinsonism due to environmental toxin exposure (possible manganese toxicity)** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Idiopathic Parkinson's disease** (ICD-10: G20) - 4.5% agreement (0 models)

Supporting Models:

- **Arsenic poisoning (chronic)** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Idiopathic Parkinson disease** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Manganese-induced parkinsonism (secondary parkinsonism)** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Wilson disease (copper accumulation)** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Drug-induced parkinsonism** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Toxic Exposure** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Manganese-induced parkinsonism (Manganism)** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Idiopathic Parkinson's Disease** (ICD-10: G20) - 4.5% agreement (0 models)

Supporting Models:

- **Mixed heavy metal toxicity** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Toxic Encephalopathy** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Pesticide-induced parkinsonism** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Manganese Toxicity** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Pallidosis** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Parkinsonism** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Toxic encephalopathy** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Chronic solvent exposure** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Manganism** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Multiple system atrophy** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Post-infectious Parkinsonism** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

- **Drug-induced Parkinsonism** (ICD-10: Unknown) - 4.5% agreement (0 models)

Supporting Models:

## Management Strategies & Clinical Pathways

### Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Neurological examination	Clinical indication	50%
2	Heavy metal screening	Clinical indication	50%

### Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
DaTscan	Differentiate idiopathic PD from other parkinsonian syndromes	Routine	As indicated
Serum manganese level	Rule out manganese toxicity	Routine	As indicated

### Treatment Recommendations

Treatment recommendations pending diagnostic confirmation.



# Model Diversity & Bias Analysis

## Model Response Overview & Cost Analysis

Model	Origin	Tier	Cost	Diagnosis	Training Profile
mistral-7b-inst	France	Budget	<\$0.01	Parkinson's disease	General
grok-4	USA	Premium	\$0.048	Secondary parkinsonism due to environmental toxin exposure (possible manganese toxicity)	Alternative
gpt-oss-120b	USA	Mid-Range	<\$0.01	Idiopathic Parkinson disease	Standard
command-r	Canada	Mid-Range	<\$0.01	Parkinson's Disease	Standard
deepseek-chat	China	Budget	<\$0.01	Parkinson's disease	Regional
gemini-2.5-pro	USA	Premium	\$0.033	of Manganese-induced Parkinsonism	General
deepseek-r1	China	Budget	<\$0.01	Manganese-induced Parkinsonism	Regional
sonar-deep-rese	USA	Premium	\$0.028	Manganese-induced parkinsonism (Manganism)	Standard
jamba-large-1.7	Israel	Premium	\$0.023	Parkinson's Disease	Standard
gemini-2.5-flas	USA	Budget	<\$0.01	Parkinson's Disease	General
mistral-large-2	France	Premium	\$0.029	Parkinson's Disease	Standard
command-r-plus	Canada	Premium	\$0.041	Parkinson's disease	Standard
wizardlm-2-8x22	USA	Mid-Range	<\$0.01	Parkinson's Disease	Standard
grok-2-1212	USA	Premium	\$0.027	Parkinson's disease	Standard
gemma-2-9b-it	USA	Budget	<\$0.01	Parkinson's Disease	Standard
gpt-4o	USA	Premium	\$0.048	Parkinsonism due to other external agents	Comprehensive
gemini-2.5-flas	USA	Budget	<\$0.01	Parkinson's Disease (early onset)	General
llama-3.2-3b-in	USA	Budget	<\$0.01	Pallidosis	General
gpt-4o-mini	USA	Budget	<\$0.01	Parkinson's Disease	General
qwen-2.5-coder-	China	Mid-Range	<\$0.01	Parkinson's Disease	Regional
claude-3-opus-2	USA	Premium	\$0.202	Parkinson's disease	Comprehensive
lfm-40b	USA	Mid-Range	<\$0.01	Parkinson's disease	Standard

\*\*Total Estimated Cost: \$0.507\*\*

## Understanding Training Profiles

Training profiles indicate the type and depth of medical knowledge in each model:

**Comprehensive:** Extensive medical literature training with broad clinical knowledge

**Standard:** Standard medical knowledge base with general clinical training

**Regional:** Region-specific medical training reflecting local practices and conditions

**General:** Broad general knowledge, not specifically trained on medical literature

**Alternative:** Alternative medical perspectives and non-conventional approaches

## AI Model Bias Analysis

AI model bias analysis is generated during orchestration (Step 2). This comprehensive analysis examines cultural, geographic, and training data biases across the AI models used.

### Primary Diagnosis Bias Factors:

- Cultural: Western models favor idiopathic PD diagnosis while Asian models emphasize environmental factors
- Geographic: Significant influence on primary diagnosis determination
- Training Data: Newer models show more consideration of environmental factors

### Alternative Diagnoses Bias:

- Missed: Traditional medicine concepts of movement disorders - Limited incorporation of non-Western medical paradigms
- Over-diagnosed: Idiopathic PD - Western models defaulted to most common diagnosis in their t...

### Bias Mitigation Recommendations:

- Geographic: Include equal representation of regional diagnostic approaches

## Detailed Model Responses

Complete diagnostic assessments from each model:

### 1. mistral-7b-inst (France, Released: 2023-09-27)

### 2. grok-4 (USA, Released: 2024-12-26)

**Primary Diagnosis:** Secondary parkinsonism due to environmental toxin exposure (possible manganese toxicity) (ICD-10: G21.2) - Confidence: 0.75

*Reasoning:* Symptoms of tremor, bradykinesia, and rigidity with basal ganglia MRI changes, combined with occupational exposure in rural Bangladesh water projects, suggest toxin-induced parkinsonism; temporal dela...

#### Differential Diagnoses:

- Idiopathic Parkinson's disease (ICD: G20) - 0.6
- Wilson's disease (ICD: E83.01) - 0.4
- Arsenic poisoning (chronic) (ICD: T57.0X1A) - 0.3

#### Key Clinical Findings:

- Progressive tremor, bradykinesia, and rigidity over 3 months
- Subtle basal ganglia signal abnormalities on MRI
- History of 2-year exposure in rural Bangladesh with symptoms starting 6 months post-return
- Patient self-research and request for environmental toxin testing

#### Recommended Tests:

- Serum and urine heavy metal screen (including manganese, arsenic, copper) - Rule in/out environmental toxin exposure as cause of parkinsonism
- DaTscan (SPECT imaging) - Differentiate idiopathic PD from secondary parkinsonism
- Serum ceruloplasmin and 24-hour urinary copper - Rule out Wilson's disease

#### Immediate Management:

- Admit for neurological evaluation and monitoring
- Initiate fall precautions due to movement disorder

#### Medications:

- Levodopa/carbidopa 25/100 mg PO

### 3. gpt-oss-120b (USA, Released: 2025-08-05)

**Primary Diagnosis:** Idiopathic Parkinson disease (ICD-10: G20) - Confidence: 0.72

*Reasoning:* Classic triad of resting tremor, bradykinesia, and rigidity with a subacute onset over months; basal ganglia MRI is often normal or shows subtle nonspecific changes. Lack of exposure timeline strongly...

**Differential Diagnoses:**

- Manganese-induced parkinsonism (secondary parkinsonism) (ICD: G21.2) - 0.45
- Wilson disease (copper accumulation) (ICD: E83.0) - 0.3
- Drug-induced parkinsonism (ICD: G21.1) - 0.25

**Key Clinical Findings:**

- Progressive resting tremor, bradykinesia, rigidity over 3 months
- Subtle basal ganglia signal abnormalities on MRI

**Recommended Tests:**

- Serum manganese level - Rule in/out manganese toxicity as cause of secondary parkinsonism
- Serum ceruloplasmin, copper, 24-hour urinary copper - Exclude Wilson disease
- DaTscan (123I-β-CIT SPECT) - Differentiate neurodegenerative Parkinson disease from drug-induced or functional causes

**Immediate Management:**

- Refer to movement disorder neurologist for confirmation and initiation of therapy
- Order urgent serum manganese and copper studies

**Medications:**

- Levodopa/Carbidopa 25/100 mg PO three times daily PO
- Pramipexole 0.125 mg PO once daily, titrate up to 1.5 mg/day as needed PO

## 4. command-r (Canada, Released: 2024-03-11)

**Primary Diagnosis:** Parkinson's Disease (ICD-10: G20) - Confidence: 0.85

*Reasoning:* Neurological symptoms include tremor, bradykinesia, and rigidity. MRI shows basal ganglia abnormalities. The temporal relationship and lack of family history support this diagnosis....

**Differential Diagnoses:**

- Toxic Exposure (ICD: Unknown) - 0.1
- Essential Tremor (ICD: R25.1) - 0.05
- Wilson's Disease (ICD: E88.2) - 0.1

**Key Clinical Findings:**

- Neurological symptoms: tremor, bradykinesia, rigidity
- MRI abnormalities in basal ganglia

**Recommended Tests:**

- Blood work - Check for toxin exposure levels and possible neurological enzyme abnormalities.
- Neuroimaging - Further evaluate brain abnormalities
- Genetic Testing - Investigate possible genetic links

**Immediate Management:**

- Initiate Parkinson's disease medication regimen
- Admit for further evaluation and monitoring

**Medications:**

- Levodopa 100mg PO
- Carbidopa 50mg PO

## 5. deepseek-chat (China, Released: 2024-12-20)

**Primary Diagnosis:** Parkinson's disease (ICD-10: G20) - Confidence: 0.7

*Reasoning:* The patient exhibits classic symptoms of Parkinson's disease (tremor, bradykinesia, rigidity), and the MRI findings in the basal ganglia support this diagnosis. However, environmental exposures must b...

### Differential Diagnoses:

- Manganese toxicity (ICD: T56.8X4A) - 0.6
- Wilson's disease (ICD: E83.01) - 0.5
- Progressive supranuclear palsy (ICD: G23.1) - 0.4

### Key Clinical Findings:

- Progressive neurological symptoms (tremor, bradykinesia, rigidity)
- Subtle signal abnormalities in basal ganglia on brain MRI

### Recommended Tests:

- Heavy metal panel (blood and urine) - Rule out manganese or other heavy metal toxicity
- Ceruloplasmin and serum copper levels - Rule out Wilson's disease
- DaTscan - Assess presynaptic dopaminergic function to confirm Parkinson's disease

### Immediate Management:

- Initiate symptomatic treatment for parkinsonism
- Refer to neurologist for further evaluation

### Medications:

- Levodopa/Carbidopa 100/25 mg PO

## 6. gemini-2.5-pro (USA, Released: 2024-12-19)

## 7. deepseek-r1 (China, Released: 2025-01-20)

**Primary Diagnosis:** Manganese-induced Parkinsonism (ICD-10: T56.5) - Confidence: 0.7

*Reasoning:* Occupational exposure to manganese (common in water treatment/purification systems) with basal ganglia MRI abnormalities and Parkinsonian symptoms. Temporal latency (6 months post-exposure) aligns wit...

### Differential Diagnoses:

- Idiopathic Parkinson's Disease (ICD: G20) - 0.3
- Wilson Disease (ICD: E83.0) - 0.2
- Chronic Pesticide Neurotoxicity (ICD: T60.9) - 0.25

**Key Clinical Findings:**

- Temporal relationship to environmental exposure (6-month latency post-return)
- Basal ganglia signal abnormalities on MRI
- Occupational history in water purification

**Recommended Tests:**

- Blood/Urine Heavy Metal Panel (Mn, Cu, Pb) - Confirm manganese/copper toxicity
- Serum Ceruloplasmin & 24-hr Urinary Copper - Rule out Wilson disease
- DAT-SPECT Scan - Differentiate Parkinson's disease (reduced uptake) vs toxin-induced Parkinsonism

**Immediate Management:**

- Remove potential ongoing toxin exposure
- Neurology referral for movement disorder evaluation

**Medications:**

- Levodopa/Carbidopa 25/100 mg TID PO

**8. sonar-deep-rese (USA, Released: 2025-03-07)**

**Primary Diagnosis:** Manganese-induced parkinsonism (Manganism) (ICD-10: T57.2) - Confidence: 0.85

*Reasoning:* Strong occupational exposure history in Bangladesh (water purification work), classic triad of parkinsonian symptoms, MRI basal ganglia changes consistent with manganese deposition, appropriate timeli...

**Differential Diagnoses:**

- Idiopathic Parkinson's Disease (ICD: G20) - 0.25
- Mixed heavy metal toxicity (ICD: T56.9) - 0.4
- Wilson's Disease (ICD: E83.01) - 0.15

**Key Clinical Findings:**

- Progressive parkinsonian symptoms (tremor, bradykinesia, rigidity)
- Two-year occupational exposure in rural Bangladesh water purification
- MRI basal ganglia signal abnormalities
- Symptoms onset 6 months after return from exposure

**Recommended Tests:**

- Serum manganese level - Confirm manganese exposure/toxicity
- DaTscan (Dopamine transporter scan) - Differentiate manganism (normal) from Parkinson's disease (abnormal)
- Comprehensive heavy metals panel (blood and urine) - Screen for arsenic, lead, mercury, and other toxic metals

**Immediate Management:**

- Ensure complete cessation of any ongoing manganese exposure
- Obtain detailed occupational and environmental exposure history
- Assess functional status and safety (fall risk evaluation)

**Medications:**

- Levodopa/Carbidopa 25/100 mg TID PO

**9. jamba-large-1.7 (Israel, Released: 2025-07-01)**

**Primary Diagnosis:** Parkinson's Disease (ICD-10: G20) - Confidence: 0.7

*Reasoning:* The patient presents with classic symptoms of tremor, bradykinesia, and rigidity. The brain MRI showing subtle basal ganglia abnormalities supports a diagnosis of a neurodegenerative disorder, and Par...

**Differential Diagnoses:**

- Essential Tremor (ICD: G25.0) - 0.5
- Multiple System Atrophy (ICD: G90.3) - 0.4
- Toxic Encephalopathy (ICD: G92) - 0.3

**Key Clinical Findings:**

- Tremor, bradykinesia, rigidity
- Subtle basal ganglia abnormalities on MRI

**Recommended Tests:**

- Dopamine Transporter (DaT) Scan - Rule out/confirm Parkinsonian syndromes
- Toxicology Screening - Rule out environmental toxin exposure
- Genetic Testing for Parkinson's - Exclude genetic forms of Parkinson's Disease

**Immediate Management:**

- Refer to neurologist for further evaluation
- Discuss potential environmental exposure risks with patient

**Medications:**

- Carbidopa-Levodopa 25/100 mg three times daily PO

**10. gemini-2.5-flas (USA, Released: 2024-12-19)****11. mistral-large-2 (France, Released: 2024-11-01)**

**Primary Diagnosis:** Parkinson's Disease (ICD-10: G20) - Confidence: 0.7

*Reasoning:* Classic symptoms of tremor, bradykinesia, and rigidity with no family history but progressive neurological symptoms over 3 months....

**Differential Diagnoses:**

- Wilson's Disease (ICD: E83.01) - 0.2
- Environmental Toxin Exposure (e.g., Manganese poisoning) (ICD: T56.9) - 0.2
- Essential Tremor (ICD: G25.0) - 0.1

**Key Clinical Findings:**

- Tremor
- Bradykinesia
- Rigidity
- Basal ganglia abnormalities on MRI

#### **Recommended Tests:**

- Blood and Urine Tests for Heavy Metals - Rule out environmental toxin exposure
- Ceruloplasmin and 24-hour urine copper - Rule out Wilson's Disease
- DAscan - Assess dopaminergic function

#### **Immediate Management:**

- Initiate symptomatic treatment for Parkinson's Disease
- Refer to neurology for further evaluation

#### **Medications:**

- Levodopa/Carbidopa 25/100 mg PO

## **12. command-r-plus (Canada, Released: 2024-04-04)**

**Primary Diagnosis:** Parkinson's disease (ICD-10: G20) - Confidence: 0.7

*Reasoning:* The patient's symptoms of tremor, bradykinesia, and rigidity, along with the subtle signal abnormalities in the basal ganglia on brain MRI, are classic features of Parkinson's disease. While the patie...

#### **Differential Diagnoses:**

- Essential tremor (ICD: G25.0) - 0.2
- Wilson's disease (ICD: E83.0) - 0.1
- Drug-induced parkinsonism (ICD: G21) - 0.05

#### **Key Clinical Findings:**

- Tremor
- Bradykinesia
- Rigidity
- Basal ganglia signal abnormalities on brain MRI

#### **Recommended Tests:**

- Neurological examination - Evaluate the presence and severity of movement disorders
- Blood tests for heavy metals and environmental toxins - Rule out exposure-related etiology
- DaTscan (Dopamine Transporter SPECT scan) - Assess presynaptic dopamine function, supporting or refuting Parkinson's diagnosis

#### **Immediate Management:**

- Referral to a movement disorder specialist for further evaluation and management
- Educating the patient about the potential diagnosis and the importance of ruling out environmental toxin exposure

#### **Medications:**

- Levodopa-carbidopa Starting with 100/25 mg, titrate to effect and tolerability PO



- Amantadine 100 mg orally twice daily, titrate as needed PO

### 13. wizardlm-2-8x22 (USA, Released: 2024-04-15)

**Primary Diagnosis:** Parkinson's Disease (ICD-10: G20) - Confidence: 0.7

*Reasoning:* Progressive neurological symptoms of tremor, bradykinesia, and rigidity with onset after the patient's return from a rural area, which could have environmental exposures contributing to the developmen...

**Differential Diagnoses:**

- Manganism (ICD: Unknown) - 0.6
- Secondary Parkinsonism due to toxic exposure (ICD: G21.1) - 0.5
- Essential Tremor (ICD: G25.0) - 0.4

**Key Clinical Findings:**

- Progressive neurological symptoms including tremor, bradykinesia, and rigidity
- Subtle signal abnormalities in basal ganglia on MRI

**Recommended Tests:**

- Blood tests for heavy metals and environmental toxins - To rule out manganism or toxic exposures
- Cerebrospinal fluid analysis - To assess for inflammatory or infectious processes
- DaTscan (Dopamine Transporter Scan) - To evaluate the integrity of dopaminergic neurons in the basal ganglia

**Immediate Management:**

- Initiate supportive care
- Refer to neurology for further evaluation

**Medications:**

- Levodopa/Carbidopa Starting at 100/25 mg three times daily, titrate as needed PO

### 14. grok-2-1212 (USA, Released: 2024-12-12)

**Primary Diagnosis:** Parkinson's disease (ICD-10: G20) - Confidence: 0.7

*Reasoning:* Progressive tremor, bradykinesia, and rigidity with basal ganglia abnormalities on MRI are highly suggestive of Parkinson's disease....

**Differential Diagnoses:**

- Manganese toxicity (ICD: T57.2) - 0.6
- Wilson's disease (ICD: E83.0) - 0.4
- Pesticide-induced parkinsonism (ICD: G21.9) - 0.3

**Key Clinical Findings:**

- Progressive tremor, bradykinesia, and rigidity
- Subtle basal ganglia abnormalities on MRI

**Recommended Tests:**

- Serum ceruloplasmin and 24-hour urinary copper - Rule in/out Wilson's disease

- Blood manganese levels - Rule in/out manganese toxicity
- DaTscan - Rule in/out Parkinson's disease

#### **Immediate Management:**

- Initiate symptomatic treatment
- Refer to neurologist

#### **Medications:**

- Levodopa-carbidopa 25/100 mg PO

## **15. gemma-2-9b-it (USA, Released: 2024-06-27)**

**Primary Diagnosis:** Parkinson's Disease (ICD-10: G20) - Confidence: 0.7

*Reasoning:* Classic triad of tremor, bradykinesia, and rigidity, with onset after exposure to potential environmental risk factors....

#### **Differential Diagnoses:**

- Manganese Toxicity (ICD: G72.5) - 0.2
- Drug-Induced Parkinsonism (ICD: Unknown) - 0.05
- Multiple System Atrophy (ICD: G20.8) - 0.05

#### **Key Clinical Findings:**

- Progressive onset of tremor, bradykinesia, and rigidity
- Temporal relationship between symptom onset and return from rural Bangladesh
- Subtle basal ganglia abnormalities on MRI

#### **Recommended Tests:**

- Lumbar puncture with manganese level analysis - To rule out manganese toxicity
- Comprehensive medication review - To identify any potential causative medications
- DaTscan - To further assess dopaminergic system function and differentiate from other parkinsonian syndromes

#### **Immediate Management:**

- Initiate supportive care measures
- Educate the patient about Parkinson's Disease and potential causes

## **16. gpt-4o (USA, Released: 2024-05-13)**

**Primary Diagnosis:** Parkinsonism due to other external agents (ICD-10: G21.1) - Confidence: 0.7

*Reasoning:* The progressive neurological symptoms (tremor, bradykinesia, rigidity) and basal ganglia abnormalities suggest a form of parkinsonism potentially linked to exposure to environmental toxins during the ...

#### **Differential Diagnoses:**

- Idiopathic Parkinson's Disease (ICD: G20) - 0.5
- Heavy Metal Toxicity (ICD: T56.8) - 0.4
- Wilson's Disease (ICD: E83.0) - 0.2

**Key Clinical Findings:**

- Progressive tremor, bradykinesia, and rigidity
- Subtle signal abnormalities in basal ganglia

**Recommended Tests:**

- Serum and urine heavy metal screening - Rule in/out heavy metal toxicity
- 24-hour urinary copper excretion - Rule in/out Wilson's Disease
- DaTscan - Differentiate between Parkinson's Disease and other parkinsonian syndromes

**Immediate Management:**

- Initiate heavy metal detoxification if toxicity is confirmed
- Symptomatic management of parkinsonism

**Medications:**

- Levodopa/carbidopa 100 mg/25 mg PO

## 17. gemini-2.5-flas (USA, Released: 2024-12-19)

**Primary Diagnosis:** Parkinson's Disease (early onset) (ICD-10: G20.A1) - Confidence: 0.7

*Reasoning:* Classic triad of tremor, bradykinesia, and rigidity. Age of onset (45) is consistent with early-onset Parkinson's. Subtle basal ganglia changes on MRI can be seen in early stages, though often normal....

**Differential Diagnoses:**

- Drug-induced Parkinsonism (ICD: G21.1) - 0.6
- Atypical Parkinsonism (e.g., Multiple System Atrophy, Progressive Supranuclear Palsy) (ICD: G23.9) - 0.5
- Wilson's Disease (ICD: E83.01) - 0.4

**Key Clinical Findings:**

- Progressive neurological symptoms: tremor, bradykinesia, rigidity (Parkinsonian triad)
- Onset at age 45 (early onset for idiopathic PD)
- Subtle signal abnormalities in basal ganglia on MRI
- Recent 2-year assignment in rural Bangladesh working on water purification projects

**Recommended Tests:**

- Neurological examination by Movement Disorder Specialist - To confirm and characterize parkinsonian symptoms, assess for atypical features, and establish a baseline motor score (e.g., UPDRS).
- DaTscan (Dopamine Transporter Scan) - To differentiate idiopathic Parkinson's disease and other degenerative parkinsonian syndromes from essential tremor or drug-induced parkinsonism. It assesses dopaminergic neuron integrity.
- Serum Ceruloplasmin and 24-hour Urinary Copper - To screen for Wilson's Disease, especially given the age of onset and basal ganglia abnormalities.

**Immediate Management:**

- Referral to a Movement Disorder Specialist for definitive diagnosis and management.
- Discuss patient's concerns regarding 'environmental toxins' and explain the diagnostic plan to address these.

**Medications:**

- Levodopa/Carbidopa Starting with low dose, e.g., 25/100 mg PO

**18. llama-3.2-3b-in (USA, Released: 2024-09-25)**

**Primary Diagnosis:** Pallidosis (ICD-10: G10.0) - Confidence: 0.8

*Reasoning:* Clinical presentation and exposure to potential environmental toxins in rural Bangladesh...

**Differential Diagnoses:**

- Parkinsonism (ICD: G20.0) - 0.2
- Toxic encephalopathy (ICD: K70.0) - 0.1
- Chronic solvent exposure (ICD: F63.0) - 0.1

**Key Clinical Findings:**

- Tremor, bradykinesia, and rigidity
- Subtle signal abnormalities in basal ganglia on brain MRI

**Recommended Tests:**

- Lumbar puncture - Rule out toxic encephalopathy
- Cranial MRI - Assess basal ganglia damage

**Immediate Management:**

- Start levodopa/carbidopa therapy
- Monitor and manage symptoms aggressively

**Medications:**

- Levodopa/carbidopa 200mg/25mg PO 3 times a day PO

**19. gpt-4o-mini (USA, Released: 2024-07-18)**

**Primary Diagnosis:** Parkinson's Disease (ICD-10: G20) - Confidence: 0.85

*Reasoning:* The combination of tremor, bradykinesia, rigidity, and MRI findings suggests a neurodegenerative disorder consistent with Parkinson's disease....

**Differential Diagnoses:**

- Multiple System Atrophy (ICD: G12.21) - 0.1
- Wilson's Disease (ICD: E83.00) - 0.05
- Drug-Induced Parkinsonism (ICD: G21.0) - 0.05

**Key Clinical Findings:**

- Progressive neurological symptoms including tremor and rigidity
- Subtle signal abnormalities in basal ganglia on MRI

**Recommended Tests:**

- Heavy metal screen - Rule out exposure to environmental toxins
- Ceruloplasmin and 24-hour urinary copper - Rule out Wilson's Disease

**Immediate Management:**

- Schedule neurology consultation
- Discuss potential environmental toxin exposure

#### **Medications:**

- Carbidopa-Levodopa 25/100 mg PO

## **20. qwen-2.5-coder- (China, Released: 2024-11-12)**

**Primary Diagnosis:** Parkinson's Disease (ICD-10: G20.9) - Confidence: 0.8

*Reasoning:* Progressive neurological symptoms including tremor, bradykinesia, and rigidity, with onset 6 months post-exposure to rural Bangladesh, typical of idiopathic PD. MRI shows subtle basal ganglia abnormal...

#### **Differential Diagnoses:**

- Manganism (ICD: G12.1) - 0.15
- Essential Tremor (ICD: G10) - 0.05
- Drug-Induced Parkinsonism (ICD: G23)

#### **Key Clinical Findings:**

- Progressive tremor, bradykinesia, rigidity
- Subtle signal abnormalities in basal ganglia on MRI

#### **Recommended Tests:**

- Blood Test for Manganese Levels - To rule in or out manganism
- CSF Analysis - To rule out other causes of Parkinsonism
- Neurological Exam - To confirm and characterize the clinical features

#### **Immediate Management:**

- Perform neurological exam
- Order initial diagnostic tests

#### **Medications:**

- Levodopa 25mg PO PO

## **21. claude-3-opus-2 (USA, Released: 2024-02-29)**

**Primary Diagnosis:** Parkinson's disease (ICD-10: G20) - Confidence: 0.7

*Reasoning:* Progressive neurological symptoms of tremor, bradykinesia, rigidity, and basal ganglia abnormalities on MRI are consistent with Parkinson's disease....

#### **Differential Diagnoses:**

- Manganese toxicity (ICD: T57.2X1A) - 0.5
- Progressive supranuclear palsy (ICD: G23.1) - 0.3
- Multiple system atrophy (ICD: G90.3) - 0.2

#### **Key Clinical Findings:**

- 3-month progressive tremor, bradykinesia, rigidity

- Subtle basal ganglia signal abnormalities on MRI

### **Recommended Tests:**

- Blood manganese level - Rule in/out manganese toxicity
- DaTscan (dopamine transporter imaging) - Assess integrity of dopaminergic system, support Parkinson's diagnosis

### **Immediate Management:**

- Check blood manganese level
- Start symptomatic treatment for Parkinsonism

### **Medications:**

- Carbidopa-Levodopa 25-100 mg PO TID PO

## **22. Ifm-40b (USA, Released: 2024-10-29)**

**Primary Diagnosis:** Parkinson's disease (ICD-10: G20) - Confidence: 0.8

*Reasoning:* The patient's symptoms of tremor, bradykinesia, and rigidity are classic for Parkinson's disease, and the absence of family history aligns with sporadic Parkinson's disease onset. The subtle signal ab...

### **Differential Diagnoses:**

- Post-infectious Parkinsonism (ICD: Unknown) - 0.3
- Drug-induced Parkinsonism (ICD: E89.1) - 0.2
- Wilson's disease (ICD: E83.5) - 0.1

### **Key Clinical Findings:**

- Progressive neurological symptoms
- Subtle signal abnormalities in basal ganglia on MRI

### **Recommended Tests:**

- DaTscan - To confirm dopaminergic deficit
- 24-hour urine copper - To rule out Wilson's disease
- Comprehensive metabolic panel - To assess for systemic diseases

### **Immediate Management:**

- Start levodopa-carbidopa 25mg/100mg twice daily
- Recommend occupational therapy

### **Medications:**

- Levodopa-carbidopa 25mg/100mg twice daily PO