MEDLEY

Medical AI Ensemble Clinical Decision Report

Case ID: custom_20250911_191559	Title: A 62-year-old man presents with a two-week history of interm...	Generated: 2025-09-11 19:18

Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Bladder Cancer *Evidence: Irregular bladder mass on ultrasound, Painless gross hematuria, History of smoking and occupational exposure*	C67.9	0.0%	Very Low	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Benign Prostatic Hyperplasia (BPH) *Evidence: Common in older men, can cause hematuria*	N40.0	11.1%	Alternative (10-29%)
Urinary Tract Infection (UTI) *Evidence: Can cause hematuria, but no dysuria or flank pain*	N39.0	11.1%	Alternative (10-29%)
Urothelial Cell Carcinoma *Evidence: Subtype of bladder cancer, consistent with symptoms*	C67.9	7.4%	Minority (<10%)
Bladder Stone *Evidence: Can cause hematuria, but no dysuria or flank pain*	N20.1	7.4%	Minority (<10%)
Renal Cell Carcinoma *Evidence: Can cause hematuria, but no dysuria or flank pain*	C64	7.4%	Minority (<10%)
Kidney Stones (Nephrolithiasis) *Evidence: Can cause hematuria, but no dysuria or flank pain*	N20.9	3.7%	Minority (<10%)
Urethral Carcinoma *Evidence: Rare, can cause hematuria*	C68.1	3.7%	Minority (<10%)
Interstitial Cystitis *Evidence: Can cause hematuria, but no dysuria or flank pain*	N30.0	3.7%	Minority (<10%)

Diagnosis	ICD-10	Support	Type
Prostatitis *Evidence: Can cause hematuria, but no dysuria or flank pain*	N34.9	0.0%	Minority (<10%)
Hematuria of Unknown Origin *Evidence: Hematuria without a clear cause*	R31.9	0.0%	Minority (<10%)

Analysis Overview

Models Queried: 7

Successful Responses: 7

Consensus Level: High

Total Cost: <$0.01

■■ Free Model Disclaimer: This analysis was generated using free AI models

Free models may provide suboptimal results. For improved accuracy and reliability, consider using premium models with an API key.

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	Bladder	Benign P	Urotheli	Urinary	Bladder	Renal Ce	Kidney S	Urethral
Painless gross	Strong	Moderate	Strong	Moderate	Moderate	Moderate	Moderate	Moderate
No dysuria	Strong	Strong	Strong	Weak	Strong	Strong	Strong	Strong
No flank pain	Strong	Strong	Strong	Weak	Strong	Strong	Strong	Strong
Irregular bladd	Strong	Weak	Strong	Weak	Weak	Weak	Weak	Weak
History of smok	Strong	Weak	Strong	Weak	Weak	Weak	Weak	Weak

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

Diagnostic Decision Tree

Step	Action	If Positive	If Negative
1	CBC & Metabolic Panel	→ Identify abnormalities	→ Consider imaging
2	SPEP/UPEP & Light Chains	→ Confirm myeloma	→ Broader cancer screening
3	Bone Marrow Biopsy	→ Stage disease	→ Alternative diagnosis
4	Skeletal Survey/PET	→ Assess extent	→ Monitor closely

Executive Summary

Case Description

A 62-year-old man presents with a two-week history of intermittent, painless gross hematuria, sometimes passing small clots. He denies dysuria, frequency, flank pain, or systemic symptoms such as fever or weight loss. His past history is significant for hypertension and type 2 diabetes, both well controlled, with no previous urinary tract infections or kidney stones. He has a 35-pack-year smoking history and worked as a painter for 30 years. Family history includes lung cancer in his father. On examination, his vitals are stable, the abdomen is soft and non-tender without palpable masses, and digital rectal examination reveals a moderately enlarged but smooth prostate.

Urinalysis shows red blood cells without proteinuria or casts, and renal function is normal. Ultrasound imaging demonstrates normal kidneys but reveals an irregular mass in the bladder wall. This clinical picture, combined with age, smoking, and occupational exposure, raises suspicion for bladder cancer. The next steps include cystoscopy, urine cytology, and CT urogram to confirm diagnosis and stage the disease. Management depends on whether the tumor is non–muscle invasive, which would be approached with transurethral resection and intravesical therapy, or muscle invasive, requiring radical cystectomy or chemoradiation

Key Clinical Findings

- Recurrent fever episodes
- Positive family history of similar episodes

Primary Recommendations

- Consider Bladder Cancer among differential diagnoses
- Obtain Urinalysis for diagnostic confirmation

Primary Diagnosis Clinical Summaries

■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
Painless gross hematuria	Clinical presentation	Key diagnostic indicator
Irregular bladder mass on ultrasound	Clinical presentation	Key diagnostic indicator
History of smoking and occupational exposure	Clinical presentation	Key diagnostic indicator
No dysuria or flank pain	Clinical presentation	Key diagnostic indicator
Family history of lung cancer	Clinical presentation	Key diagnostic indicator

■ Recommended Tests

Test Name	Type	Priority	Rationale
Urinalysis	Laboratory	Urgent	Diagnostic confirmation
CT Urogram	Laboratory	Urgent	Diagnostic confirmation

■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Cystoscopy	Medical	Immediate	Critical intervention
Urine Cytology	Medical	Immediate	Critical intervention

Diagnostic Landscape Analysis

Detailed Diagnostic Analysis

The ensemble analysis identified **Bladder Cancer** as the primary diagnosis with limited consensus among 4 models.

Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Benign Prostatic Hyperplasia (BPH) *Evidence: Common in older men, can cause hematuria*	11.1%	3 models	Less likely
Urinary Tract Infection (UTI) *Evidence: Can cause hematuria, but no dysuria or flank pain*	11.1%	3 models	Less likely
Urothelial Cell Carcinoma *Evidence: Subtype of bladder cancer, consistent with symptoms*	7.4%	2 models	Unlikely
Bladder Stone *Evidence: Can cause hematuria, but no dysuria or flank pain*	7.4%	2 models	Unlikely
Renal Cell Carcinoma *Evidence: Can cause hematuria, but no dysuria or flank pain*	7.4%	2 models	Unlikely
Kidney Stones (Nephrolithiasis) *Evidence: Can cause hematuria, but no dysuria or flank pain*	3.7%	1 models	Unlikely
Urethral Carcinoma *Evidence: Rare, can cause hematuria*	3.7%	1 models	Unlikely
Interstitial Cystitis *Evidence: Can cause hematuria, but no dysuria or flank pain*	3.7%	1 models	Unlikely

Minority Opinions

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

- **Urothelial Cell Carcinoma** (ICD-10: Unknown) - 7.4% agreement (2 models)
  Supporting Models: Unknown, Unknown
- **Bladder Stone** (ICD-10: Unknown) - 7.4% agreement (2 models)
  Supporting Models: Unknown, Unknown
- **Renal Cell Carcinoma** (ICD-10: Unknown) - 7.4% agreement (2 models)
  Supporting Models: Unknown, Unknown
- **Kidney Stones (Nephrolithiasis)** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Unknown

- **Urethral Carcinoma** (ICD-10: Unknown) - 3.7% agreement (1 models)

  Supporting Models: Unknown

- **Interstitial Cystitis** (ICD-10: Unknown) - 3.7% agreement (1 models)

  Supporting Models: Unknown

- **Prostatitis** (ICD-10: Unknown) - 0.0% agreement (0 models)

  Supporting Models:

- **Hematuria of Unknown Origin** (ICD-10: Unknown) - 0.0% agreement (0 models)

  Supporting Models:

Additional Diagnoses Considered:

- **Benign Prostatic Hyperplasia (BPH)** (ICD-10: N40.0) - 42.9% (3 models)

  Evidence: Common in older men, can cause hematuria

- **Urinary Tract Infection (UTI)** (ICD-10: N39.0) - 42.9% (3 models)

  Evidence: Can cause hematuria, but no dysuria or flank pain

Management Strategies & Clinical Pathways

Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Cystoscopy	Clinical indication	50%
2	Urine Cytology	Clinical indication	50%

Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
Urinalysis	Diagnostic confirmation	Routine	As indicated
CT Urogram	Diagnostic confirmation	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
deepseek-chat-v	China	Unknown	<$0.01	Bladder Cancer	General
deepseek-r1	China	Unknown	<$0.01	Bladder cancer	General
gemma-3-12b-it	USA	Unknown	<$0.01	Bladder Cancer	General
llama-3.2-3b-in	USA	Free	Free	Bladder Cancer	General
mistral-7b-inst	France	Free	Free	Bladder Cancer	General
gpt-oss-20b	USA	Unknown	<$0.01	Urothelial carcinoma of the bladder	General
shisa-v2-llama3	Japan/USA	Free	Free	Bladder cancer	General

Total Estimated Cost: <$0.01

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.

Detailed Model Responses

Complete diagnostic assessments from each model:

1. deepseek-chat-v (China, Released: 2024-12-26)

Primary Diagnosis: Bladder Cancer (ICD-10: C67.9) - Confidence: 0.9

Differential Diagnoses:

- Benign Prostatic Hyperplasia (ICD: N40.0) - 0.3
- Urothelial Cell Carcinoma (ICD: C67.9) - 0.7
- Renal Cell Carcinoma (ICD: C64.1) - 0.2

Key Clinical Findings:

- 62-year-old male
- intermittent painless gross hematuria
- 35-pack-year smoking history
- occupational exposure as painter

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

3. gemma-3-12b-it (USA, Released: 2024-12-11)

Primary Diagnosis: Bladder Cancer (ICD-10: C67.9) - Confidence: 0.9

Differential Diagnoses:

- Benign Prostatic Hyperplasia (BPH) (ICD: N39.0) - 0.3
- Urinary Tract Infection (UTI) (ICD: N39.0) - 0.2
- Bladder Stone (ICD: N20.0) - 0.1

Key Clinical Findings:

- Intermittent painless gross hematuria
- Irregular mass in the bladder wall on ultrasound
- 35-pack-year smoking history
- Occupational exposure to paint

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

Primary Diagnosis: Bladder Cancer (ICD-10: C60) - Confidence: 0.8

Differential Diagnoses:

- Benign Prostatic Hyperplasia (ICD: N36.0) - 0.4

- Bladder Infection (ICD: N40.0) - 0.2
- Interstitial Cystitis (ICD: N298.8) - 0.1

Key Clinical Findings:

- Painless gross hematuria
- Irregular mass in the bladder wall
- History of smoking

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

Primary Diagnosis: Bladder Cancer (ICD-10: C67) - Confidence: 0.8

Differential Diagnoses:

- Benign Prostatic Hyperplasia (ICD: N30.0) - 0.6
- Chronic Pyelonephritis (ICD: N10.9) - 0.4
- Renal Cell Carcinoma (Metastasis from Lung Cancer) (ICD: C61.9) - 0.2

Key Clinical Findings:

- Intermittent, painless gross hematuria
- Moderately enlarged but smooth prostate
- Irregular mass in the bladder wall on ultrasound

6. gpt-oss-20b (USA, Released: 2024-05-13)

7. shisa-v2-llama3 (Japan/USA, Released: 2024-12-20)

Primary Diagnosis: Bladder cancer (ICD-10: C67.9) - Confidence: 0.8

Differential Diagnoses:

- Benign prostatic hyperplasia (BPH) (ICD: BPH-N40.1) - 0.2
- Kidney stones (nephrolithiasis) (ICD: N20.9) - 0.1
- Urinary tract infection (UTI) (ICD: N30.9) - 0.05

Key Clinical Findings:

- Painless gross hematuria
- Irregular bladder wall mass on ultrasound
- 35-pack-year smoking history
- Occupational exposure to potential carcinogens