MEDLEY

Medical AI Ensemble Clinical Decision Report

Case ID: Case_13	Title: Case_13 - Medical Analysis	Generated: 2025-08-12 00:37

Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
No consensus reached	M32.14	0.0%	Very Low	PRIMARY

Analysis Overview
Models Queried: 22
Successful Responses: 22
Consensus Level: Unknown
Total Estimated Cost: $0.385

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

Diagnostic Decision Tree

Step	Action	If Positive	If Negative
1	Initial Laboratory Tests	→ Confirm suspicion	→ Broaden differential
2	Imaging Studies	→ Identify pathology	→ Consider specialized tests
3	Specialized Testing	→ Definitive diagnosis	→ Empiric treatment
4	Treatment Trial	→ Continue if effective	→ Reconsider diagnosis

Executive Summary

Case Description

Complex Urology Case Presentation

Patient Demographics

Age: 24 years old

Sex: Male

Ethnicity: Middle Eastern (Iranian heritage)

Occupation: Graduate student in chemistry

Chief Complaint

"Burning when I urinate and blood in my urine for the past 6 months, on and off"

History of Present Illness

24-year-old male presents with a 6-month history of intermittent dysuria, gross hematuria, and suprapubic discomfort. Episodes occur every 2-3 weeks, last 3-5 days, then resolve completely. Patient reports no fever during episodes. Pain is described as "deep burning" both during and after urination. Has had 4 courses of antibiotics from urgent care with temporary improvement each time.

Recently developed new symptoms: bilateral flank pain, decreased urine output, and weight gain of 8 lbs over 2 weeks. Denies recent travel, new sexual partners, or illicit drug use. Reports family history of "kidney problems" in paternal uncle.

Past Medical History

- Recurrent "kidney stones" as teenager (no documentation available)
- Treated for depression with sertraline 50mg daily for 2 years
- No known allergies

Social History

- PhD student in organic chemistry, works with various solvents and compounds
- Denies tobacco use
- Social alcohol use (2-3 drinks/week)
- Sexually active with one female partner for 8 months
- Recent immigrant (3 years ago), limited family medical records

Physical Examination

- Vital Signs: BP 145/92, HR 88, Temp 37.1°C, RR 16
- General: Mild periorbital edema, appears fatigued
- Genitourinary: No penile discharge, testes normal, mild suprapubic tenderness
- Costovertebral angle: Bilateral tenderness
- Extremities: 1+ pitting edema to mid-shins

Laboratory Results

Urinalysis (during symptomatic episode)

- Color: Dark amber with visible blood
- Protein: 3+ (300 mg/dL)
- Blood: 3+
- RBC: >50/hpf, many dysmorphic

- WBC: 15-20/hpf
- Nitrites: Negative
- Leukocyte esterase: 2+
- Casts: 3-5 RBC casts/lpf, 1-2 granular casts/lpf

Urine Culture
- Day 1: Mixed flora <10,000 CFU/mL
- Day 3: No growth

Serum Chemistry
- Creatinine: 2.1 mg/dL (baseline unknown)
- BUN: 45 mg/dL
- eGFR: 42 mL/min/1.73m²
- Sodium: 138 mEq/L
- Potassium: 4.8 mEq/L
- Chloride: 104 mEq/L

Additional Labs
- CBC: WBC 8,200, Hgb 11.2 g/dL, Plt 180,000
- ESR: 45 mm/hr
- CRP: 12 mg/L
- C3: 45 mg/dL (Low, normal 90-180)
- C4: 8 mg/dL (Low, normal 10-40)
- ANA: Positive, 1:160 homogeneous pattern
- Anti-dsDNA: Pending
- ANCA: Pending

Imaging
- Renal Ultrasound: Bilateral increased echogenicity, no hydronephrosis, no obvious stones
- CT Abdomen/Pelvis (non-contrast): Bilateral renal enlargement, no stones identified

Key Clinical Findings

• Positive family history of similar episodes
• Elevated inflammatory markers (CRP, ESR)

Primary Recommendations

• Consider Primary diagnosis among differential diagnoses
• Nephrology consultation
• Renal biopsy
• Complete autoimmune workup

Primary Diagnosis Clinical Summaries

Orchestrated analysis not available for this case.

Diagnostic Landscape Analysis

Detailed Diagnostic Analysis

Detailed Alternative Analysis

The model ensemble showed strong consensus on the primary diagnosis with limited alternative considerations.

Minority Opinions

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

Additional Diagnoses Considered:

- **Lupus Nephritis** (ICD-10: Unknown) - 0.0% (0 models)
- **IgA Nephropathy** (ICD-10: Unknown) - 0.0% (0 models)
- **Post-Infectious Glomerulonephritis** (ICD-10: Unknown) - 0.0% (0 models)
- **Membranoproliferative Glomerulonephritis** (ICD-10: Unknown) - 0.0% (0 models)
- **ANCA-associated Vasculitis** (ICD-10: Unknown) - 0.0% (0 models)
- **Chronic Kidney Disease** (ICD-10: Unknown) - 0.0% (0 models)
- **Glomerulonephritis with lupus nephritis** (ICD-10: Unknown) - 0.0% (0 models)

Diagnostic Confidence Analysis

The diagnostic confidence is based on the convergence of clinical findings, patient demographics, and symptom patterns consistent with the primary diagnosis.

Management Strategies & Clinical Pathways

Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Nephrology consultation	Glomerulonephritis requires specialist evaluation	50%
2	Renal biopsy	Definitive diagnosis of glomerular disease type	50%
3	Complete autoimmune workup	Rule out systemic lupus erythematosus	50%

Recommended Diagnostic Tests

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	Renal Infection (Pyelonephritis)	General
grok-4	USA	Premium	$0.039	Glomerulonephritis with lupus nephritis	Alternative
gpt-oss-120b	USA	Mid-Range	<$0.01	Lupus nephritis (probable class III/IV)	Standard
command-r	Canada	Mid-Range	<$0.01	Acute Pyelonephritis	Standard
deepseek-chat	China	Budget	<$0.01	Lupus Nephritis	Regional
gemini-2.5-pro	USA	Premium	$0.036	Not specified	General
deepseek-r1	China	Budget	<$0.01	Not specified	Regional
sonar-deep-rese	USA	Premium	$0.017	Lupus Nephritis	Standard
jamba-large-1.7	Israel	Premium	$0.017	Lupus Nephritis	Standard
gemini-2.5-flas	USA	Budget	<$0.01	Lupus Nephritis	General
mistral-large-2	France	Premium	$0.022	IgA Nephropathy (Berger's Disease)	Standard
command-r-plus	Canada	Premium	$0.028	Glomerulonephritis	Standard
wizardlm-2-8x22	USA	Mid-Range	<$0.01	Rapidly Progressive Glomerulonephritis	Standard
grok-2-1212	USA	Premium	$0.018	Lupus Nephritis	Standard
gemma-2-9b-it	USA	Budget	<$0.01	Systemic Lupus Nephritis	Standard
gpt-4o	USA	Premium	$0.028	IgA Nephropathy	Comprehensive
gemini-2.5-flas	USA	Budget	<$0.01	Glomerulonephritis, likely related to autoimmune disease (e.g., Lupus Nephritis)	General
llama-3.2-3b-in	USA	Budget	<$0.01	Systemic Lupus Erythematosus (SLE) with renal involvement	General
gpt-4o-mini	USA	Budget	<$0.01	Glomerulonephritis	General
qwen-2.5-coder-	China	Mid-Range	<$0.01	Acute Interstitial Nephritis with Hematuria	Regional
claude-3-opus-2	USA	Premium	$0.158	Lupus nephritis	Comprehensive
lfm-40b	USA	Mid-Range	<$0.01	Interstitial cystitis	Standard

Total Estimated Cost: $0.385

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: Models from 6 countries with Western dominance may miss cultural factors. Chinese models (18.2%) provide alternative perspective.
- Geographic: Western model dominance (109.1%) creates strong bias toward Western medical paradigms. High Western medical paradigm influence expected
- Training Data: English-dominant training data creates systematic bias against non-Western medical practices and symptom presentations.

Alternative Diagnoses Bias:

- Missed: Traditional Medicine Conditions - Western model dominance may miss traditional medicine diagno...
- Missed: Socioeconomic-Related Conditions - Homeless status bias may cause dismissive attitudes and miss...

Bias Mitigation Recommendations:

- Socioeconomic Bias: Consider cultural context in diagnosis interpretation
- Geographic/Cultural Bias: Incorporate diverse cultural perspectives in diagnosis

Detailed Model Responses

Complete diagnostic assessments from each model:

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

Primary Diagnosis: Renal Infection (Pyelonephritis) (ICD-10: N10.90) - Confidence: 0.8

Differential Diagnoses:

- Renal Cell Carcinoma (ICD: C64.9) - 0.2
- Urolithiasis (Kidney Stones) (ICD: N13.9) - 0.15
- Glomerulonephritis (ICD: B80.9) - 0.1

Key Clinical Findings:

- Recurrent UTI episodes, gross hematuria, flank pain, decreased urine output, proteinuria, RBC casts in urine, elevated ESR, elevated CRP, positive ANA
- Bilateral renal enlargement on CT Abdomen/Pelvis, normal renal ultrasound

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

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

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

Primary Diagnosis: Acute Pyelonephritis (ICD-10: N10) - Confidence: 0.75

Differential Diagnoses:

- Interstitial Cystitis (ICD: N30.9) - 0.6
- Bladder Cancer (ICD: C67) - 0.4
- Renal■Abcess (ICD: N14.9) - 0.3

Key Clinical Findings:

- Recurrent urinary tract infections with transient relief from antibiotics
- Bilateral flank pain, tenderness & renal enlargement
- Gross hematuria, dysuria, suprapubic discomfort
- Mild periorbital edema, elevated BP, pending ANCA & anti-dsDNA results

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

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

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

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

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

Primary Diagnosis: Lupus Nephritis (ICD-10: N02.2) - Confidence: 0.8

Differential Diagnoses:

- IgA Nephropathy (ICD: N02.0) - 0.6
- Membranous Nephropathy (ICD: N02.3) - 0.4
- Chronic Pyelonephritis (ICD: N11.9) - 0.3

Key Clinical Findings:

- Bilateral renal enlargement
- Dysmorphic RBCs in urinalysis
- Low C3 and C4
- Positive ANA

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

11. mistral-large-2 (France, Released: 2024-11-01)

Primary Diagnosis: IgA Nephropathy (Berger's Disease) (ICD-10: N08.0) - Confidence: 0.85

Differential Diagnoses:

- Lupus Nephritis (ICD: M32.14) - 0.7
- Post-infectious Glomerulonephritis (ICD: N05.9) - 0.6
- Membranoproliferative Glomerulonephritis (ICD: N01.7) - 0.55

Key Clinical Findings:

- Intermittent dysuria and gross hematuria
- Bilateral flank pain and suprapubic tenderness
- Decreased urine output and weight gain
- Proteinuria and hematuria with RBC casts

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

Primary Diagnosis: Glomerulonephritis (ICD-10: N03.9) - Confidence: 0.7

Differential Diagnoses:

- Interstitial Nephritis (ICD: N16.1) - 0.6
- Nephrolithiasis (Kidney Stones) (ICD: N20.9) - 0.5
- Urinary Tract Infection (UTI) (ICD: N39.0) - 0.4

Key Clinical Findings:

- Gross hematuria
- Elevated creatinine and BUN
- Low C3 and C4 levels
- Positive ANA

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

Primary Diagnosis: Rapidly Progressive Glomerulonephritis (ICD-10: N02.0) - Confidence: 0.7

Differential Diagnoses:

- IgA Nephropathy (ICD: N03.2) - 0.5
- Lupus Nephritis (ICD: N05.1) - 0.6
- Post-infectious Glomerulonephritis (ICD: N05.9) - 0.4

Key Clinical Findings:

- Intermittent dysuria, gross hematuria, and suprapubic discomfort for 6 months
- New onset bilateral flank pain, decreased urine output, and weight gain
- Proteinuria (3+) and hematuria with dysmorphic RBCs and RBC casts on urinalysis
- Elevated serum creatinine and BUN with reduced eGFR

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

Primary Diagnosis: Lupus Nephritis (ICD-10: M32.14) - Confidence: 0.8

Differential Diagnoses:

- IgA Nephropathy (ICD: N02.8) - 0.6
- ANCA-Associated Vasculitis (ICD: M31.3) - 0.5
- Chronic Interstitial Nephritis (ICD: N11.9) - 0.4

Key Clinical Findings:

- Intermittent dysuria and gross hematuria for 6 months
- Bilateral flank pain, decreased urine output, and weight gain
- Elevated serum creatinine and BUN, low eGFR
- Urinalysis showing proteinuria, hematuria, and RBC casts

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

Primary Diagnosis: Systemic Lupus Nephritis (ICD-10: N17.0) - Confidence: 0.8

Differential Diagnoses:

- Acute Interstitial Nephritis (ICD: N17.9) - 0.15
- Renal Cell Carcinoma (ICD: C64.9) - 0.05
- Glomerulonephritis (Other) (ICD: N03.9) - 0.1

Key Clinical Findings:

- Gross hematuria
- Proteinuria
- Dysmorphic red blood cells on urinalysis
- Renal casts on urinalysis

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

Primary Diagnosis: IgA Nephropathy (ICD-10: N02.8) - Confidence: 0.8

Differential Diagnoses:

- Lupus Nephritis (ICD: M32.14) - 0.7
- Alport Syndrome (ICD: Q87.81) - 0.6
- Acute Glomerulonephritis (ICD: N00.9) - 0.5

Key Clinical Findings:

- Intermittent dysuria and gross hematuria
- Bilateral flank pain
- Decreased urine output
- Weight gain with 1+ pitting edema

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

Primary Diagnosis: Glomerulonephritis, likely related to autoimmune disease (e.g., Lupus Nephritis) (ICD-10: N08.5) - Confidence: 0.9

Differential Diagnoses:

- IgA Nephropathy (ICD: N02.8) - 0.7
- Post-infectious Glomerulonephritis (ICD: N08.0) - 0.5
- Alport Syndrome (ICD: Q87.81) - 0.6

Key Clinical Findings:

- 6-month history of intermittent dysuria, gross hematuria, suprapubic discomfort
- Recent development of bilateral flank pain, decreased urine output, 8 lbs weight gain
- Elevated BP (145/92)
- Mild periorbital edema, 1+ pitting edema to mid-shins

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

Primary Diagnosis: Systemic Lupus Erythematosus (SLE) with renal involvement (ICD-10: M32.0) - Confidence: 0.9

Differential Diagnoses:

- Interstitial Nephritis (ICD: N17.0) - 0.6
- Glomerulonephritis (ICD: N05.0) - 0.5
- Chronic Pyelonephritis (ICD: N35.0) - 0.4

Key Clinical Findings:

- Bilateral flank pain
- Decreased urine output
- Weight gain
- Dark amber urine with visible blood

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

Primary Diagnosis: Glomerulonephritis (ICD-10: N00) - Confidence: 0.8

Differential Diagnoses:

- Interstitial Nephritis (ICD: N10) - 0.7
- Renal Stones (ICD: N20) - 0.5
- Urinary Tract Infection (ICD: N39.0) - 0.4

Key Clinical Findings:

- Intermittent dysuria and hematuria
- Bilateral flank pain
- Bilateral renal enlargement on imaging
- Low C3 and C4 levels

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

Primary Diagnosis: Acute Interstitial Nephritis with Hematuria (ICD-10: N17.2) - Confidence: 0.85

Differential Diagnoses:

- Renal Cell Carcinoma (RCC) (ICD: C64.9) - 0.15
- IgA Nephropathy (ICD: N30.0) - 0.1
- Systemic Lupus Erythematosus (SLE) (ICD: M32.9) - 0.1

Key Clinical Findings:

- Recurrent hematuria and dysuria for 6 months
- Bilateral flank pain, decreased urine output, and weight gain over 2 weeks
- Recent significant rise in creatinine and BUN

- Positive ANA with homogeneous pattern

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

Primary Diagnosis: Lupus nephritis (ICD-10: M32.14) - Confidence: 0.8

Differential Diagnoses:

- Acute interstitial nephritis (ICD: N12) - 0.6
- IgA nephropathy (ICD: N02.8) - 0.5
- Granulomatosis with polyangiitis (ICD: M31.3) - 0.4

Key Clinical Findings:

- Recurrent dysuria, hematuria, and suprapubic discomfort
- Bilateral flank pain and decreased urine output
- Proteinuria, dysmorphic RBCs, and RBC casts on urinalysis
- Elevated creatinine and decreased eGFR

22. lfm-40b (USA, Released: 2024-10-29)