

# MEDLEY

## Medical AI Ensemble Clinical Decision Report

Case ID: Case\_13

Title: Case\_13 - Medical Analysis

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### Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Lupus Nephritis <i>Evidence: Positive ANA (1:160 homogeneous), Low complement levels (C3/C4), RBC casts and dysmorphic RBCs, Proteinuria (3+)</i>	M32.14	40.0%	Low	PRIMARY

### Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Lupus Nephritis <i>Evidence: Positive ANA, Low complement levels, RBC casts</i>	M32.14	40.0%	Strong Alt (≥30%)
IgA Nephropathy <i>Evidence: Recurrent hematuria, Young male, RBC casts</i>	N02.8	32.0%	Strong Alt (≥30%)

Analysis Overview
Models Queried: 25
Successful Responses: 25
Consensus Level: High
Total Estimated Cost: \$0.582

# 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	Lupus Ne	IgA Neph	MPGN
hematuria	-	+++	-
proteinuria	-	-	-
low complement	+++	-	-
positive ANA	+++	-	-
RBC casts	-	-	-

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

## Diagnostic Decision Tree

Step	Action	If Positive	If Negative
1	Anti-dsDNA antibodies	Proceed with kidney biopsy	Consider alternative glomerulonephritis

# 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/1.73m<sup>2</sup>
- 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

- Elevated inflammatory markers (CRP, ESR)
- Positive family history of similar episodes
- Recurrent fever episodes

## Primary Recommendations

- Consider Lupus Nephritis among differential diagnoses
- Initiate high-dose corticosteroids
- Nephrology consultation
- Obtain Kidney biopsy for diagnostic confirmation

## Primary Diagnosis Clinical Summaries

### ■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
Positive ANA (1:160 homogeneous)	Laboratory result	Classic serologic marker for SLE

### ■ Recommended Tests

Test Name	Type	Priority	Rationale
Kidney biopsy	Biopsy	Urgent	Determine lupus nephritis class

### ■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Methylprednisolone pulse therapy	Medication	Immediate	Prevent further kidney damage

### ■ Medications

Medication	Dosage	Route/Frequency	Indication
Methylprednisolone	500-1000mg	IV / Daily	Induction therapy

# Diagnostic Landscape Analysis

## Detailed Diagnostic Analysis

The ensemble analysis identified **Lupus Nephritis** as the primary diagnosis with 40.0% consensus among 10 models.

## Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Lupus Nephritis <i>Evidence: Positive ANA, Low complement levels, RBC casts</i>	40.0%	10 models	Worth investigating
IgA Nephropathy <i>Evidence: Recurrent hematuria, Young male, RBC casts</i>	32.0%	8 models	Worth investigating

## Minority Opinions

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

### Additional Diagnoses Considered:

- **Lupus Nephritis** (ICD-10: M32.14) - 40.0% (10 models)  
Evidence: Positive ANA, Low complement levels, RBC casts, Proteinuria
- **IgA Nephropathy** (ICD-10: N02.8) - 32.0% (8 models)  
Evidence: Recurrent hematuria, Young male, RBC casts

## Diagnostic Confidence Analysis

### High Confidence Findings:

- Positive ANA
- Low complement levels
- RBC casts

### Areas Requiring Further Investigation:

- Class of lupus nephritis
- Role of chemical exposure

## Management Strategies & Clinical Pathways

### Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Initiate high-dose corticosteroids	Clinical indication	50%
2	Nephrology consultation	Clinical indication	50%

### Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
Kidney biopsy	Confirm lupus nephritis class	Routine	As indicated
Anti-dsDNA antibodies	Confirm SLE diagnosis	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
llama-3.1-70b-i	USA	Unknown	<\$0.01	Lupus Nephritis	Standard
mistral-7b-inst	France	Budget	<\$0.01	Renal Inflammatory Disease (e.g., IgA Nephropathy or Lupus Nephritis)	General
grok-4	USA	Premium	\$0.056	Lupus Nephritis (Systemic Lupus Erythematosus with renal involvement)	Alternative
gpt-oss-120b	USA	Mid-Range	\$0.012	Systemic lupus erythematosus with renal involvement (lupus nephritis, likely Class III/IV)	Standard
command-r	Canada	Mid-Range	<\$0.01	Acute Pyelonephritis with Renal Parenchymal Disease	Standard
gpt-4-turbo	USA	Unknown	<\$0.01	Lupus Nephritis	Comprehensive
deepseek-chat	China	Budget	<\$0.01	Lupus nephritis	Regional
gemini-2.5-pro	USA	Premium	\$0.043	as Lupus Nephritis	General
deepseek-r1	China	Budget	<\$0.01	Lupus Nephritis (Class IV likely)	Regional
claude-3.5-sonn	USA	Unknown	<\$0.01	Lupus Nephritis	Comprehensive
sonar-deep-rese	USA	Premium	\$0.024	Lupus Nephritis	Standard
jamba-large-1.7	Israel	Premium	\$0.028	Lupus Nephritis (Class IV)	Standard
gemini-2.5-flas	USA	Budget	<\$0.01	Lupus Nephritis (Class III or IV)	General
mistral-large-2	France	Premium	\$0.033	IgA Nephropathy	Standard
command-r-plus	Canada	Premium	\$0.048	Glomerulonephritis	Standard
wizardlm-2-8x22	USA	Mid-Range	<\$0.01	Glomerulonephritis, membranoproliferative	Standard
grok-2-1212	USA	Premium	\$0.026	Lupus Nephritis	Standard
gemma-2-9b-it	USA	Budget	<\$0.01	Lupus nephritis	Standard
gpt-4o	USA	Premium	\$0.042	IgA Nephropathy (Berger's Disease)	Comprehensive
gemini-2.5-flas	USA	Budget	<\$0.01	IgA Nephropathy (Berger's Disease)	General
llama-3.2-3b-in	USA	Budget	<\$0.01	Rapidly Progressive Glomerulonephritis (RPGN)	General
gpt-4o-mini	USA	Budget	<\$0.01	Lupus Nephritis	General
qwen-2.5-coder-	China	Mid-Range	<\$0.01	Systemic Lupus Erythematosus (SLE) with Glomerulonephritis	Regional
claude-3-opus-2	USA	Premium	\$0.243	Lupus nephritis	Comprehensive
l1m-40b	USA	Mid-Range	<\$0.01	Interstitial cystitis	Standard



**\*\*Total Estimated Cost: \$0.582\*\***

## 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 show stronger tendency to diagnose lupus nephritis
- Geographic: Significant variation in primary diagnosis confidence
- Training Data: Recent models show more nuanced approach to diagnosis

### Alternative Diagnoses Bias:

- Missed: IgA Nephropathy - Underrepresented in Western training data despite being comm...
- Over-diagnosed: Lupus Nephritis - Western models show higher confidence in lupus diagnosis

### Bias Mitigation Recommendations:

- Geographic: Include more diverse population data in training

## Detailed Model Responses

Complete diagnostic assessments from each model:

### 1. llama-3.1-70b-i (USA, Released: 2024-09-25)

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

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

**Primary Diagnosis:** Lupus Nephritis (Systemic Lupus Erythematosus with renal involvement) (ICD-10: M32.14) - Confidence: 0.85

*Reasoning:* Presentation with hematuria, proteinuria, dysmorphic RBCs, RBC casts, low C3/C4, positive ANA, and acute kidney injury in a young male with family history suggests autoimmune glomerulonephritis, likel...

#### Differential Diagnoses:

- IgA Nephropathy (ICD: N02.8) - 0.6
- ANCA-Associated Vasculitis (e.g., Granulomatosis with Polyangiitis) (ICD: M31.30) - 0.5
- Membranoproliferative Glomerulonephritis (ICD: N05.5) - 0.4

#### Key Clinical Findings:

- Intermittent gross hematuria with dysmorphic RBCs and RBC casts indicating glomerular origin
- Acute kidney injury with elevated creatinine (2.1 mg/dL) and oliguria
- Low complement levels (C3 45, C4 8) and positive ANA suggesting autoimmune process
- Bilateral flank tenderness, edema, and hypertension

#### Recommended Tests:

- Renal Biopsy - Confirm glomerulonephritis type and rule in/out lupus nephritis vs. other GN
- Anti-dsDNA and ANCA (pending results) - Rule in lupus or vasculitis
- ASO Titer and Anti-Streptolysin O - Rule out post-streptococcal glomerulonephritis

#### Immediate Management:

- Admit for monitoring of renal function and fluid status
- Strict blood pressure control targeting <130/80 mmHg

#### Medications:

- Lisinopril 10 mg PO
- Prednisone 1 mg/kg (approx 60 mg for 60kg patient) PO

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

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

**Primary Diagnosis:** Acute Pyelonephritis with Renal Parenchymal Disease (ICD-10: N10.9) - Confidence: 0.85

*Reasoning:* Pyelonephritis is a likely cause of the patient's symptoms, given the history of recurrent urinary tract infections, dysuria, and hematuria. The renal ultrasound and CT findings suggest bilateral rena...

### Differential Diagnoses:

- Interstitial Nephritis (ICD: N01.9) - 0.1
- Recurrent Urosepsis (ICD: R65.2, N39.0) - 0.05
- Renal Artery Stenosis (ICD: I70.2) - 0.1

### Key Clinical Findings:

- Bilateral renal enlargement on imaging
- Recurrent urinary tract infection symptoms (dysuria, hematuria) with flank pain and elevated inflammatory markers

### Recommended Tests:

- Urine Culture and Sensitivity - To confirm UTI and guide antibiotic choice
- Anti-dsDNA Antibodies - To assess for potential autoimmune etiology
- Renal Ultrasound or MRI with Contrast - To further characterize renal abnormalities

### Immediate Management:

- Initiate intravenous antibiotics (e.g., Ceftriaxone) based on urine culture results
- Hospital admission for intravenous fluid hydration and monitoring

### Medications:

- Ceftriaxone 1g daily IV
- Furosemide 40mg daily IV

## 6. gpt-4-turbo (USA, Released: 2024-05-13)

**Primary Diagnosis:** Lupus Nephritis (ICD-10: N08.5) - Confidence: 0.85

*Reasoning:* The patient's symptoms of hematuria, proteinuria, and RBC casts, along with low complement levels (C3, C4), positive ANA, and systemic symptoms such as weight gain and edema, strongly suggest lupus ne...

### Differential Diagnoses:

- IgA Nephropathy (ICD: N02.8) - 0.6
- Post-infectious Glomerulonephritis (ICD: N01.0) - 0.4

### Key Clinical Findings:

- Presence of dysmorphic RBCs and RBC casts in urine
- Low complement levels (C3 and C4)
- Positive ANA test

**Recommended Tests:**

- Anti-dsDNA antibody test - To confirm the diagnosis of lupus nephritis
- Kidney biopsy - To assess the extent of kidney damage and confirm the specific type of glomerulonephritis
- 24-hour urine protein - To quantify the degree of proteinuria

**Immediate Management:**

- Admit to hospital for close monitoring and management
- Initiate fluid management to address edema and potential overhydration

**Medications:**

- Prednisone 1 mg/kg/day oral

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

**Primary Diagnosis:** Lupus nephritis (ICD-10: M32.14) - Confidence: 0.9

*Reasoning:* The patient presents with recurrent hematuria, proteinuria, RBC casts, and renal dysfunction. Low complement levels (C3, C4) and positive ANA strongly suggest lupus nephritis. Family history of kidney...

**Differential Diagnoses:**

- IgA nephropathy (ICD: N02.8) - 0.6
- Post-infectious glomerulonephritis (ICD: N00.8) - 0.4
- Chronic interstitial nephritis (ICD: N12) - 0.3

**Key Clinical Findings:**

- Recurrent hematuria and proteinuria
- Low complement levels (C3, C4)
- Positive ANA
- Renal dysfunction (eGFR 42 mL/min/1.73m<sup>2</sup>)

**Recommended Tests:**

- Kidney biopsy - Confirm lupus nephritis and assess disease activity
- Anti-dsDNA antibody - Further support lupus diagnosis
- 24-hour urine protein - Quantify proteinuria

**Immediate Management:**

- Admit for further evaluation and management
- Strict blood pressure control

**Medications:**

- Prednisone 1 mg/kg/day PO
- Mycophenolate mofetil 500 mg twice daily PO

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

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

## 10. claude-3.5-sonn (USA, Released: 2024-02-29)

**Primary Diagnosis:** Lupus Nephritis (ICD-10: M32.14) - Confidence: 0.85

*Reasoning:* Combination of proteinuria, hematuria with RBC casts, low complement levels, positive ANA, systemic symptoms (edema), and renal dysfunction in a young male. Pattern suggests glomerulonephritis, with s...

### Differential Diagnoses:

- IgA Nephropathy (ICD: N02.8) - 0.6
- ANCA-Associated Vasculitis (ICD: M31.30) - 0.4
- Chemical-Induced Nephropathy (ICD: N14.4) - 0.3

### Key Clinical Findings:

- Proteinuria (3+)
- Dysmorphic RBCs and RBC casts
- Low C3 and C4 complement levels
- Positive ANA (1:160)

### Recommended Tests:

- Kidney Biopsy - Confirm diagnosis and classify lupus nephritis
- 24-hour Urine Protein - Quantify proteinuria
- Anti-Smith Antibody - Support SLE diagnosis

### Immediate Management:

- Hospital admission for acute kidney injury
- Start pulse methylprednisolone
- Initiate fluid management

### Medications:

- Methylprednisolone 1000mg IV
- Mycophenolate mofetil 2-3g/day oral

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

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

**Primary Diagnosis:** Lupus Nephritis (Class IV) (ICD-10: M32.14) - Confidence: 0.9

*Reasoning:* The patient presents with several suggestive findings of systemic lupus erythematosus (SLE) nephritis, including bilateral renal enlargement, hematuria with dysmorphic RBCs, RBC casts, ANA

positivity,...

#### **Differential Diagnoses:**

- IgA Nephropathy (Berger's Disease) (ICD: N02.0) - 0.6
- Membranoproliferative Glomerulonephritis (MPGN) (ICD: N03.7) - 0.5
- Post-Infectious Glomerulonephritis (ICD: N00.9) - 0.4

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

- Hematuria with dysmorphic RBCs and RBC casts
- Low C3 and C4, positive ANA
- Bilateral renal enlargement
- Mild periorbital edema and weight gain

#### **Recommended Tests:**

- Kidney Biopsy - Confirm the diagnosis of lupus nephritis and determine the class
- Anti-dsDNA - Confirm SLE
- Repeat Urinalysis and Urine Culture - Rule out infection and monitor ongoing kidney function

#### **Immediate Management:**

- Refer to Nephrology for urgent evaluation and possible kidney biopsy
- Start patient on ACE inhibitor or ARB to manage blood pressure and proteinuria

#### **Medications:**

- Lisinopril 10 mg PO daily PO
- Prednisone 1 mg/kg/day (up to 60 mg/day) PO PO

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

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

**Primary Diagnosis:** IgA Nephropathy (ICD-10: N08.0) - Confidence: 0.8

*Reasoning:* Classic presentation with gross hematuria, dysmorphic RBCs, proteinuria, elevated creatinine, and low complement levels....

#### **Differential Diagnoses:**

- Lupus Nephritis (ICD: M32.14) - 0.6
- Post-Infectious Glomerulonephritis (ICD: N05.9) - 0.4
- Membranoproliferative Glomerulonephritis (ICD: N03.2) - 0.3

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

- Gross hematuria with dysmorphic RBCs
- Proteinuria
- Elevated creatinine
- Low complement levels

#### **Recommended Tests:**

- Renal Biopsy - To confirm the diagnosis of IgA nephropathy or other glomerulonephritis
- Anti-dsDNA antibodies - To further evaluate for lupus nephritis
- ANCA antibodies - To rule out vasculitis

#### **Immediate Management:**

- Admit for further evaluation and management
- Strict fluid intake and output monitoring

#### **Medications:**

- Prednisone 60 mg daily PO
- Lisinopril 10 mg daily PO

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

**Primary Diagnosis:** Glomerulonephritis (ICD-10: N039) - Confidence: 0.7

*Reasoning:* The patient's history, laboratory findings, and imaging results suggest glomerulonephritis as the most likely diagnosis. History of intermittent hematuria, dysuria, and flank pain, along with decrease...

#### **Differential Diagnoses:**

- Interstitial Nephritis (ICD: N10) - 0.6
- Recurrent Kidney Stones (ICD: N20.9) - 0.4
- Urinary Tract Infection (UTI) (ICD: N39.0) - 0.3

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

- Intermittent dysuria, gross hematuria, suprapubic discomfort, and recent onset of flank pain, decreased urine output, and weight gain.
- Positive ANA, low C3/C4 levels, elevated inflammatory markers (ESR, CRP), and abnormal urinalysis results during a symptomatic episode.

#### **Recommended Tests:**

- Anti-dsDNA Antibody Test - To evaluate for lupus nephritis, which could explain the positive ANA and renal involvement.
- Renal Biopsy - Definitive diagnosis of glomerulonephritis or interstitial nephritis, providing insight into the specific type and guiding treatment.
- 24-hour Urine Collection for Proteinuria - Quantify the degree of protein loss in the urine, aiding in the assessment of glomerular damage and guiding treatment.

#### **Immediate Management:**

- Ensure adequate fluid intake to promote diuresis and reduce the risk of renal complications.
- Monitor blood pressure and renal function closely, given the elevated creatinine and reduced eGFR.

#### **Medications:**

- Prednisone Starting dose of 1 mg/kg/day, tapering based on response PO
- Angiotensin-Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Starting with a low dose, adjusting based on blood pressure and renal function PO

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

**Primary Diagnosis:** Glomerulonephritis, membranoproliferative (ICD-10: N05.2) - Confidence: 0.7

*Reasoning:* Proteinuria, hematuria with dysmorphic RBCs, RBC casts, low C3 and C4 levels, positive ANA, and renal insufficiency suggest a glomerular disease, with membranoproliferative glomerulonephritis being hi...

**Differential Diagnoses:**

- Immunoglobulin A nephropathy (ICD: N01.1) - 0.6
- Systemic lupus erythematosus (ICD: L93.0) - 0.5
- Post-infectious glomerulonephritis (ICD: N00.9) - 0.4

**Key Clinical Findings:**

- Intermittent dysuria, gross hematuria, and suprapubic discomfort for 6 months
- Bilateral flank pain and decreased urine output
- Proteinuria with dysmorphic RBCs and RBC casts on urinalysis
- Low complement levels (C3 and C4)

**Recommended Tests:**

- Kidney biopsy - To confirm the type of glomerulonephritis and guide treatment
- Anti-dsDNA antibody - To evaluate for systemic lupus erythematosus
- ANCA vasculitis panel - To rule out ANCA-associated vasculitis

**Immediate Management:**

- Assess volume status and manage electrolyte imbalances
- Initiate blood pressure control with ACE inhibitor or ARB if hypertensive

**Medications:**

- Prednisone 1 mg/kg/day PO

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

**Primary Diagnosis:** Lupus Nephritis (ICD-10: N08.5) - Confidence: 0.85

*Reasoning:* Positive ANA, low C3 and C4, proteinuria, hematuria, and renal dysfunction suggest autoimmune renal involvement. Bilateral renal enlargement on CT supports this diagnosis....

**Differential Diagnoses:**

- IgA Nephropathy (ICD: N02.0) - 0.6
- Chronic Interstitial Nephritis (ICD: N11.9) - 0.5
- Polycystic Kidney Disease (ICD: Q61.2) - 0.3

**Key Clinical Findings:**

- Intermittent dysuria and hematuria
- Bilateral flank pain and decreased urine output
- Positive ANA and low complement levels

**Recommended Tests:**

- Renal biopsy - To confirm lupus nephritis or other glomerular disease
- Anti-dsDNA antibody - To further support diagnosis of lupus
- ANCA - To rule out ANCA-associated vasculitis



**Immediate Management:**

- Initiate renal protective measures
- Refer to nephrology

**Medications:**

- Prednisone 1 mg/kg/day PO
- Ramipril 2.5 mg/day PO

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

**Primary Diagnosis:** Lupus nephritis (ICD-10: N19.0) - Confidence: 0.75

*Reasoning:* The patient presents with hematuria, proteinuria, elevated creatinine, decreased urine output, and positive ANA with a homogeneous pattern. These findings, along with the history of family 'kidney pr...

**Differential Diagnoses:**

- Acute interstitial nephritis (ICD: N17.9) - 0.15
- Infectious pyelonephritis (ICD: N10) - 0.08
- IgA Nephropathy (ICD: N03) - 0.05

**Key Clinical Findings:**

- Gross hematuria and proteinuria
- Elevated creatinine and decreased eGFR
- Positive ANA with a homogeneous pattern and low complement levels

**Recommended Tests:**

- Renal biopsy - To confirm diagnosis and determine the extent of kidney involvement.
- Anti-dsDNA and ANCA testing - To further evaluate for lupus and other autoimmune conditions.

**Immediate Management:**

- Hospital admission for close monitoring of kidney function and fluid status.
- Initiate high-dose corticosteroids.

**Medications:**

- Prednisone 1mg/kg/day PO

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

**Primary Diagnosis:** IgA Nephropathy (Berger's Disease) (ICD-10: N02.8) - Confidence: 0.8

*Reasoning:* The patient presents with recurrent gross hematuria, proteinuria, and renal impairment, along with a history suggestive of nephritic syndrome. The low complement levels and positive ANA suggest an imm...

**Differential Diagnoses:**

- Lupus Nephritis (ICD: M32.14) - 0.6
- Alport Syndrome (ICD: Q87.81) - 0.4
- Post-Streptococcal Glomerulonephritis (ICD: N00.9) - 0.3

**Key Clinical Findings:**

- Intermittent gross hematuria
- Low complement levels (C3 and C4)
- Positive ANA
- Bilateral renal enlargement on imaging

**Recommended Tests:**

- Renal biopsy - To confirm IgA nephropathy or other glomerulonephritis
- Anti-dsDNA antibodies - To rule in/out lupus nephritis
- Hearing test - To rule out Alport syndrome

**Immediate Management:**

- Manage hypertension
- Address renal impairment

**Medications:**

- Lisinopril 10 mg PO
- Prednisone 60 mg PO

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

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

**Primary Diagnosis:** Rapidly Progressive Glomerulonephritis (RPGN) (ICD-10: Nephritis, unspecified (M32.9)) - Confidence: 0.8

*Reasoning:* Patient's symptoms of hematuria, proteinuria, and renal dysfunction, along with low C3 and C4 levels, are consistent with RPGN. The patient's recent exposure to organic solvents and compounds, as a gr...

**Differential Diagnoses:**

- Interstitial Nephritis (ICD: Nephritis, unspecified (M32.9)) - 0.2
- Post-Streptococcal Glomerulonephritis (ICD: Poststreptococcal glomerulonephritis (N17.9)) - 0.1
- Systemic Lupus Erythematosus (SLE) (ICD: Lupus erythematosus (M32.0)) - 0.05

**Key Clinical Findings:**

- Presence of dysmorphic RBCs in the urine
- Low C3 and C4 levels

**Recommended Tests:**

- Urine C3 and C4 levels - To rule in RPGN and SLE
- Anti-dsDNA antibody test - To confirm SLE diagnosis
- Immunofluorescence renal biopsy - To confirm RPGN diagnosis

**Immediate Management:**

- Initiate immunosuppressive therapy with corticosteroids and/or cyclophosphamide

- Monitor urine output and renal function closely

#### **Medications:**

- Prednisone 60 mg/day PO

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

**Primary Diagnosis:** Lupus Nephritis (ICD-10: M32.14) - Confidence: 0.85

*Reasoning:* The patient has positive ANA, low complement levels (C3 and C4), renal dysfunction, and symptoms consistent with glomerulonephritis....

#### **Differential Diagnoses:**

- IgA Nephropathy (ICD: N03.2) - 0.7
- Acute Kidney Injury Secondary to Obstruction (ICD: N17.9) - 0.6
- Renal Cell Carcinoma (ICD: C64.9) - 0.5

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

- Positive ANA with homogeneous pattern
- Bilateral renal enlargement with decreased renal function

#### **Recommended Tests:**

- Anti-dsDNA antibodies - To confirm diagnosis of systemic lupus erythematosus (SLE)
- Renal biopsy - To evaluate the type and extent of nephritis

#### **Immediate Management:**

- Initiate workup for lupus nephritis
- Assess need for renal biopsy

#### **Medications:**

- Prednisone 1 mg/kg/day PO
- Hydrochloroquine 200 mg twice daily PO

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

**Primary Diagnosis:** Systemic Lupus Erythematosus (SLE) with Glomerulonephritis (ICD-10: M32.9) - Confidence: 0.85

*Reasoning:* Positive ANA, low C3 and C4 levels, proteinuria, hematuria, and renal involvement suggest SLE with glomerulonephritis....

#### **Differential Diagnoses:**

- Acute Interstitial Nephritis (ICD: N18.9) - 0.6
- IgA Nephropathy (ICD: N19.1) - 0.5
- Renal Cell Carcinoma (ICD: C64.9) - 0.4

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

- Positive ANA with homogeneous pattern
- Low C3 and C4 levels

- Proteinuria and hematuria
- Elevated creatinine and BUN

#### **Recommended Tests:**

- Anti-dsDNA - Confirm SLE
- ANCA - Rule out vasculitis
- 24-hour urine protein - Quantify proteinuria

#### **Immediate Management:**

- Refer to a nephrologist
- Initiate corticosteroids if SLE confirmed

#### **Medications:**

- Methylprednisolone 1 mg/kg/day IV
- Hydrochlorothiazide 25 mg PO

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

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

*Reasoning:* Recurrent episodes of hematuria, proteinuria, dysmorphic RBCs, RBC casts, low complements, positive ANA, and renal insufficiency in a young male patient....

#### **Differential Diagnoses:**

- IgA nephropathy (ICD: N02.8) - 0.6
- Membranoproliferative glomerulonephritis (MPGN) (ICD: N05.5) - 0.5
- Chronic pyelonephritis (ICD: N11.9) - 0.3

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

- Recurrent episodes of gross hematuria, proteinuria, and renal insufficiency
- Positive ANA, low complements (C3, C4), dysmorphic RBCs, and RBC casts

#### **Recommended Tests:**

- Kidney biopsy - Confirm diagnosis of lupus nephritis and determine histological class
- Anti-dsDNA antibodies - Support diagnosis of SLE if positive
- ANCA - Rule out ANCA-associated vasculitis

#### **Immediate Management:**

- Admit to hospital for further evaluation and management
- Start IV methylprednisolone 500-1000 mg daily for 3 days

#### **Medications:**

- Prednisone 1 mg/kg/day PO PO
- Mycophenolate mofetil 1000-1500 mg BID PO

## **25. lfm-40b (USA, Released: 2024-10-29)**

**Primary Diagnosis:** Interstitial cystitis (ICD-10: N30.0) - Confidence: 0.7

*Reasoning:* The patient's history of chronic dysuria, gross hematuria, flank pain, and renal enlargement, along with elevated inflammatory markers and decreased renal function, suggest a diagnosis of interstitial...

**Differential Diagnoses:**

- Chronic pyelonephritis (ICD: N10) - 0.5
- Systemic lupus nephritis (ICD: M32.1) - 0.4
- Chronic interstitial nephritis (ICD: N18.9) - 0.3

**Key Clinical Findings:**

- Bilateral flank pain
- Decreased urine output
- Weight gain
- Positive ANA

**Recommended Tests:**

- Anti-dsDNA - Confirm systemic lupus erythematosus
- Renal biopsy - Confirm interstitial cystitis or chronic interstitial nephritis
- Urine culture sensitivity - Rule out resistant bacterial infection

**Immediate Management:**

- Start gabapentin for pain management
- Hydration

**Medications:**

- Gabapentin 300 mg PO TID PO