

# 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	40.9%	Moderate	PRIMARY

### Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Lupus Nephritis <i>Evidence: Positive ANA, Low complement levels, RBC casts</i>	M32.14	40.9%	Strong Alt (≥30%)
IgA Nephropathy <i>Evidence: Recurrent hematuria, Young male, RBC casts</i>	N02.8	36.4%	Strong Alt (≥30%)

Analysis Overview
Models Queried: 22
Successful Responses: 22
Consensus Level: High
Total Estimated Cost: \$0.572

# 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	Kidney biopsy	Start immunosuppression based on class	Consider alternative 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/1.73m<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)	Serological marker	Classic marker for SLE

### ■ Recommended Tests

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

### ■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
High-dose corticosteroids	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 40.9% consensus among 9 models.

## Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Lupus Nephritis <i>Evidence: Positive ANA, Low complement levels, RBC casts</i>	40.9%	9 models	Worth investigating
IgA Nephropathy <i>Evidence: Recurrent hematuria, Young male, RBC casts</i>	36.4%	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) - 40.9% (9 models)  
Evidence: Positive ANA, Low complement levels, RBC casts, Proteinuria
- **IgA Nephropathy** (ICD-10: N02.8) - 36.4% (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:

- Exact 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

## 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 Inflammatory Disease (e.g., IgA Nephropathy or Lupus Nephritis)	General
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
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
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
grok-4	USA	Premium	\$0.056	Lupus Nephritis (Systemic Lupus Erythematosus with renal involvement)	Alternative
l1m-40b	USA	Mid-Range	<\$0.01	Interstitial cystitis	Standard

**\*\*Total Estimated Cost: \$0.572\*\***

### 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 showed stronger preference for lupus nephritis diagnosis
- Geographic: Significant influence on primary diagnosis selection
- Training Data: Newer models show more nuanced understanding of complement levels

### Alternative Diagnoses Bias:

- Missed: IgA Nephropathy - Lower prevalence in Western populations led to underemphasis
- Over-diagnosed: Lupus Nephritis - Western models showed higher confidence in SLE diagnosis

### Bias Mitigation Recommendations:

- Geographic: Include more diverse population data

## Detailed Model Responses

Complete diagnostic assessments from each model:

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

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

### 3. 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

### 4. 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

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

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

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

## **8. 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

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

## **10. 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

## **11. 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

## **12. 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

### **13. 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

## **14. 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

## **15. 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

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

## **17. 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

## 18. 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

## 19. 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

## 20. 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

## 21. 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

## **22. Ifm-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