MEDLEY

Medical AI Ensemble Clinical Decision Report

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Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Familial Mediterranean Fever *Evidence: recurrent fever episodes, periodic abdominal pain, arthritis, elevated inflammatory markers*	E85.0	63.0%	High	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Systemic Lupus Erythematosus *Evidence: arthritis, fever, elevated inflammatory markers*	M32.9	0.0%	Strong Alt (≥30%)
Inflammatory Bowel Disease *Evidence: abdominal pain, elevated inflammatory markers*	K50.9	0.0%	Strong Alt (≥30%)
Septic Arthritis *Evidence: arthritis, fever*	M00.9	0.0%	Alternative (20-29%)

Analysis Overview
Models Queried: 0
Successful Responses: 0
Consensus Level: Moderate
Total Estimated Cost: Free

Executive Summary

Complex medical case presenting with recurrent fever episodes. periodic abdominal pain. arthritis. Multiple AI models analyzed the case with 63.0% consensus on Familial Mediterranean Fever.

Key Clinical Findings

Primary Recommendations

- Moderate consensus (63.0%) suggests Familial Mediterranean Fever
- Genetic testing for MEFV mutations
- Start colchicine therapy
- Obtain MEFV gene sequencing for diagnostic confirmation

Primary Diagnosis Clinical Summaries

■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
Recurrent fever episodes	Patient history	Cardinal feature of FMF

■ Recommended Tests

Test Name	Type	Priority	Rationale
MEFV gene sequencing	Laboratory	Urgent	Confirm FMF diagnosis

■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Colchicine initiation	Medication	Within days	Prevent attacks and complications

■ Medications

Medication	Dosage	Route/Frequency	Indication
Colchicine	0.6 mg	Oral / Twice daily	FMF prophylaxis

Diagnostic Landscape Analysis

Detailed Diagnostic Analysis

The ensemble analysis identified **Familial Mediterranean Fever** as the primary diagnosis with 63.0% consensus among 17 models.

Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Systemic Lupus Erythematosus *Evidence: arthritis, fever, elevated inflammatory markers*	0.0%	13 models	Unlikely
Inflammatory Bowel Disease *Evidence: abdominal pain, elevated inflammatory markers*	0.0%	9 models	Unlikely
Septic Arthritis *Evidence: arthritis, fever*	0.0%	7 models	Unlikely

Minority Opinions

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

Additional Diagnoses Considered:

- **Systemic Lupus Erythematosus** (ICD-10: M32.9) - 48.1% (13 models)
  Evidence: arthritis, fever, elevated inflammatory markers
- **Inflammatory Bowel Disease** (ICD-10: K50.9) - 33.3% (9 models)
  Evidence: abdominal pain, elevated inflammatory markers
- **Septic Arthritis** (ICD-10: M00.9) - 25.9% (7 models)
  Evidence: arthritis, fever

Diagnostic Confidence Analysis

High Confidence Findings:

- recurrent fever
- family history
- ethnic background

Areas Requiring Further Investigation:

- exact genetic mutation
- response to colchicine

Management Strategies & Clinical Pathways

Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Genetic testing for MEFV mutations	Clinical indication	50%
2	Start colchicine therapy	Clinical indication	50%

Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
MEFV gene sequencing	Confirm FMF diagnosis	Routine	As indicated
ANA and anti-dsDNA	Rule out SLE	Routine	As indicated

Treatment Recommendations

Treatment recommendations pending diagnostic confirmation.

Model Diversity & Bias Analysis

Model Response Overview & Cost Analysis

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 tendency to consider FMF despite Somali origin
- Geographic: Western approach dominated due to model distribution
- Training Data: Newer models showed more nuanced understanding of FMF genetics

Alternative Diagnoses Bias:

- Missed: Tuberculosis - Lower TB prevalence in model training regions
- Over-diagnosed: SLE - Western models more likely to consider SLE

Bias Mitigation Recommendations:

- Geographic: Include more diverse population genetics data

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/Finding	Familial Med	Systemic Lup	Inflammatory	Septic Arthr
Family History	+++	?	?	?
Elevated Inflam	+++	++	++	?
Pain	+++	?	++	?
Arthritis	+++	++	?	++
Fever	+++	++	?	++

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

Diagnostic Decision Tree

Step	Action	If Positive	If Negative
1	MEFV gene sequencing	Start colchicine therapy	Consider expanded genetic panel
2	Inflammatory markers (CRP/ESR)	Support FMF diagnosis	Consider alternative diagnoses

Detailed Model Responses

Complete diagnostic assessments from each model: