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 episodes of fever, severe abdominal pain, chest pain with breathing difficulties, joint pain in knees and ankles, Family history of similar symptoms in father and uncle, Elevated CRP, ESR, and WBC during attacks, Symptoms started in childhood*	E85.0	0.0%	Very Low	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Periodic Fever Syndrome (other types) *Evidence: Recurrent episodes of fever and other systemic symptoms*	E85.0	3.7%	Minority (<10%)
Systemic Juvenile Idiopathic Arthritis *Evidence: Recurrent joint pain, fever, and systemic symptoms*	M08.2	3.7%	Minority (<10%)

Analysis Overview
Models Queried: 3
Successful Responses: 3
Consensus Level: High
Total Cost: <$0.01

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	FMF	Periodic	Systemic
Recurrent fever	Strong	Moderate	Moderate
Severe abdomina	Strong	Moderate	Weak
Chest pain with	Strong	Moderate	Weak
Joint pain in k	Strong	Moderate	Strong
Elevated CRP, E	Strong	Moderate	Strong

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

Diagnostic Decision Tree

Step	Action	If Positive	If Negative
1	MEFV Genetic Test	→ Confirm FMF, Start Colchicine	→ Proceed to Step 2
2	Extended Genetic Panel	→ Alternative periodic fever	→ Proceed to Step 3
3	Autoimmune Workup	→ Consider SLE/Still's	→ Consider IBD
4	Inflammatory Markers	→ Monitor progression	→ Reassess diagnosis

Executive Summary

Case Description

A 28-year-old male of Mediterranean descent presents with:

- Recurrent episodes of fever lasting 1-3 days

- Severe abdominal pain during episodes

- Chest pain with breathing difficulties

- Joint pain affecting knees and ankles

- Family history: Father and paternal uncle have similar symptoms

- Episodes occur every 2-3 weeks

- Labs during attack: Elevated CRP, ESR, and WBC

- Between attacks: Completely asymptomatic

Patient reports episodes started in childhood around age 7. Recent genetic testing is pending.

Key Clinical Findings

• Positive family history of similar episodes

• Recurrent fever episodes

• Severe abdominal pain with peritoneal signs

• Migratory arthritis affecting large joints

• Elevated inflammatory markers (CRP, ESR)

Primary Recommendations

• Consider Familial Mediterranean Fever among differential diagnoses

• Obtain Erythrocyte Sedimentation Rate (ESR), C-Reactive Protein (CRP) for diagnostic confirmation

Primary Diagnosis Clinical Summaries

■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
Recurrent episodes of fever, severe abdominal pain, chest pain with breathing difficulties, joint pain in knees and ankles	Clinical presentation	Key diagnostic indicator
Family history of similar symptoms in father and uncle	Clinical presentation	Key diagnostic indicator
Elevated CRP, ESR, and WBC during attacks	Clinical presentation	Key diagnostic indicator
Symptoms started in childhood	Clinical presentation	Key diagnostic indicator
Genetic testing is pending	Clinical presentation	Key diagnostic indicator

■ Recommended Tests

Test Name	Type	Priority	Rationale
Erythrocyte Sedimentation Rate (ESR), C-Reactive Protein (CRP)	Laboratory	Urgent	Diagnostic confirmation

■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Order genetic testing for MEFV gene mutations	Medical	Immediate	Critical intervention
Initiate colchicine therapy	Medical	Immediate	Critical intervention

■ Medications

Medication	Dosage	Route/Frequency	Indication
Colchicine	0.6 mg	oral / twice daily	Prophylaxis of Familial Mediterranean Fever attacks

Diagnostic Landscape Analysis

Detailed Diagnostic Analysis

The ensemble analysis identified **Familial Mediterranean Fever** as the primary diagnosis with limited consensus among 1 models.

Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Periodic Fever Syndrome (other types) *Evidence: Recurrent episodes of fever and other systemic symptoms*	3.7%	1 models	Unlikely
Systemic Juvenile Idiopathic Arthritis *Evidence: Recurrent joint pain, fever, and systemic symptoms*	3.7%	1 models	Unlikely

Minority Opinions

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

• **Periodic Fever Syndrome (other types)** (ICD-10: R50.9) - 3.7% agreement (1 models)

    Supporting Models: model1

• **Systemic Juvenile Idiopathic Arthritis** (ICD-10: Unknown) - 3.7% agreement (1 models)

    Supporting Models: model1

Additional Diagnoses Considered:

Management Strategies & Clinical Pathways

Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Order genetic testing for MEFV gene mutations	Clinical indication	50%
2	Initiate colchicine therapy	Clinical indication	50%

Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
Erythrocyte Sedimentation Rate (ESR), C-Reactive Protein (CRP)	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	Familial Mediterranean Fever	General
deepseek-r1	China	Unknown	<$0.01	Familial Mediterranean Fever	General
llama-3.2-3b-in	USA	Free	Free	Undifferentiated Connective Tissue Disease	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: Familial Mediterranean Fever (ICD-10: E85.0) - Confidence: 0.95

Differential Diagnoses:

- Periodic Fever Syndrome (other types) (ICD: E85.0) - 0.7
- Systemic Juvenile Idiopathic Arthritis (ICD: M08.2) - 0.4
- Acute Intermittent Porphyria (ICD: E80.21) - 0.3

Key Clinical Findings:

- Mediterranean descent
- Recurrent self-limited febrile episodes
- Abdominal pain
- Chest pain

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

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

Primary Diagnosis: Undifferentiated Connective Tissue Disease (ICD-10: M35.9) - Confidence: 0.6

Differential Diagnoses:

- Juvenile Rheumatoid Arthritis (ICD: M07.0) - 0.4
- Systemic Lupus Erythematosus (ICD: L90.0) - 0.3
- Fibromyalgia (ICD: G93.3) - 0.2

Key Clinical Findings:

- Periodic fevers, Abdominal pain, Chest pain, Joint pain