MEDLEY

Medical AI Ensemble Clinical Decision Report

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Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Familial Mediterranean Fever *Evidence: Strong family history, Recurrent fever episodes, Genetic testing pending, Mediterranean ancestry pattern*	E85.0	0.0%	Very Low	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Periodic Fever, Aphthous Stomatitis, Pharyngitis, Adenitis (PFAPA) Syndrome *Evidence: Periodic fever pattern, Childhood onset possible*	R50.89	7.4%	Minority (<10%)
Systemic Juvenile Idiopathic Arthritis *Evidence: Systemic inflammation, Fever episodes*	M08.2	7.4%	Minority (<10%)
Adult-Onset Still's Disease *Evidence: Adult presentation, Systemic symptoms*	M35.3	3.7%	Minority (<10%)
Hyperimmunoglobulinemia D Syndrome (HIDS) *Evidence: Periodic fever syndrome, Genetic component*	E85.8	3.7%	Minority (<10%)

Analysis Overview
Models Queried: 5
Successful Responses: 5
Consensus Level: High
Total Estimated 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	PFAPA Sy	Systemic
recurrent fever	Strong	-	-
family history	Strong	-	-
systemic inflam	-	-	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

• Recurrent fever episodes
• Migratory arthritis affecting large joints
• Severe abdominal pain with peritoneal signs
• Elevated inflammatory markers (CRP, ESR)
• Positive family history of similar episodes

Primary Recommendations

• Consider Familial Mediterranean Fever among differential diagnoses
• Confirm FMF diagnosis with genetic testing for MEFV gene mutations
• Assess current disease activity and attack frequency
• Evaluate for amyloidosis complications
• Obtain MEFV gene mutation analysis for diagnostic confirmation

Primary Diagnosis Clinical Summaries

■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
Recurrent fever episodes	Clinical presentation	Key diagnostic indicator
Family history	Clinical presentation	Key diagnostic indicator
Genetic testing pending	Clinical presentation	Key diagnostic indicator
Mediterranean ancestry	Clinical presentation	Key diagnostic indicator
Systemic inflammation	Clinical presentation	Key diagnostic indicator

■ Recommended Tests

Test Name	Type	Priority	Rationale
MEFV gene mutation analysis	Laboratory	Urgent	Diagnostic confirmation
Complete blood count with differential	Laboratory	Urgent	Diagnostic confirmation
Comprehensive metabolic panel	Laboratory	Urgent	Diagnostic confirmation
Erythrocyte sedimentation rate (ESR)	Laboratory	Urgent	Diagnostic confirmation
C-reactive protein (CRP)	Laboratory	Urgent	Diagnostic confirmation

■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Confirm FMF diagnosis with genetic testing for MEFV gene mutations	Medical	Immediate	Critical intervention
Assess current disease activity and attack frequency	Medical	Immediate	Critical intervention
Evaluate for amyloidosis complications	Medical	Immediate	Critical intervention
Review family history and genetic counseling needs	Medical	Immediate	Critical intervention

■ Medications

Medication	Dosage	Route/Frequency	Indication
Colchicine	0.6 mg	oral / twice daily	prevention of FMF attacks and amyloidosis
Anakinra	100 mg	subcutaneous / daily	refractory FMF attacks

Diagnostic Landscape Analysis

Detailed Diagnostic Analysis

The ensemble analysis identified **Familial Mediterranean Fever** as the primary diagnosis with 0.0% consensus among 4 models.

Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Periodic Fever, Aphthous Stomatitis, Pharyngitis, Adenitis (PFAPA) Syndrome *Evidence: Periodic fever pattern, Childhood onset possible*	7.4%	2 models	Unlikely
Systemic Juvenile Idiopathic Arthritis *Evidence: Systemic inflammation, Fever episodes*	7.4%	2 models	Unlikely
Adult-Onset Still's Disease *Evidence: Adult presentation, Systemic symptoms*	3.7%	1 models	Unlikely
Hyperimmunoglobulinemia D Syndrome (HIDS) *Evidence: Periodic fever syndrome, Genetic component*	3.7%	1 models	Unlikely

Minority Opinions

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

• **Periodic Fever, Aphthous Stomatitis, Pharyngitis, Adenitis (PFAPA) Syndrome** (ICD-10: R50.9) - 7.4% agreement (2 models)

Supporting Models: Model1, Model5

• **Systemic Juvenile Idiopathic Arthritis** (ICD-10: Unknown) - 7.4% agreement (2 models)

Supporting Models: Model1, Model3

• **Adult-Onset Still's Disease** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model3

• **Hyperimmunoglobulinemia D Syndrome (HIDS)** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model5

Additional Diagnoses Considered:

Management Strategies & Clinical Pathways

Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Confirm FMF diagnosis with genetic testing for MEFV gene mutations	Clinical indication	50%
2	Assess current disease activity and attack frequency	Clinical indication	50%
3	Evaluate for amyloidosis complications	Clinical indication	50%
4	Review family history and genetic counseling needs	Clinical indication	50%

Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
MEFV gene mutation analysis	Diagnostic confirmation	Routine	As indicated
Complete blood count with differential	Diagnostic confirmation	Routine	As indicated
Comprehensive metabolic panel	Diagnostic confirmation	Routine	As indicated
Erythrocyte sedimentation rate (ESR)	Diagnostic confirmation	Routine	As indicated
C-reactive protein (CRP)	Diagnostic confirmation	Routine	As indicated
Serum amyloid A protein	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
gemma-2-9b-it	USA	Free	Free	Not specified	General
gemma-3-12b-it	USA	Unknown	<$0.01	Periodic Fever Syndrome (likely Familial Mediterranean Fever - FMF)	General
mistral-7b-inst	France	Free	Free	Familial Mediterranean Fever	General
shisa-v2-llama3	Japan/USA	Free	Free	Familial Mediterranean Fever	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, Aphthous Stomatitis, Pharyngitis, Adenitis (PFAPA) Syndrome (ICD: R50.89) - 0.3
- Systemic Juvenile Idiopathic Arthritis (ICD: M08.2) - 0.25
- Hereditary Periodic Fever Syndrome (other than FMF) (ICD: E85.8) - 0.2

Key Clinical Findings:

- Mediterranean descent
- Recurrent self-limited febrile episodes
- Abdominal pain
- Pleuritic chest pain

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

3. gemma-3-12b-it (USA, Released: 2024-12-11)

Primary Diagnosis: Periodic Fever Syndrome (likely Familial Mediterranean Fever - FMF) (ICD-10: M15.4) - Confidence: 0.85

Differential Diagnoses:

- Adult-Onset Still's Disease (ICD: M35.3) - 0.6
- Systemic Juvenile Idiopathic Arthritis (sJIA) (ICD: M08.0) - 0.5
- Vasculitis (e.g., Polyarteritis Nodosa) (ICD: M34.0) - 0.4

Key Clinical Findings:

- Recurrent fever episodes (1-3 days)
- Severe abdominal pain during episodes
- Chest pain and breathing difficulties
- Joint pain (knees and ankles)

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

5. shisa-v2-llama3 (Japan/USA, Released: 2024-12-20)

Primary Diagnosis: Familial Mediterranean Fever (ICD-10: E85.0) - Confidence: 0.8

Differential Diagnoses:

- Periodic Fever, Aphthous Stomatitis, Pharyngitis, Adenitis (PFAPA) Syndrome (ICD: M89.89) - 0.3
- Hyperimmunoglobulinemia D Syndrome (HIDS) (ICD: E85.8) - 0.2
- Tumor Necrosis Factor Receptor-Associated Periodic Syndrome (TRAPS) (ICD: M89.89) - 0.2

Key Clinical Findings:

- Recurrent episodes of fever, abdominal pain, chest pain, and joint pain
- Family history of similar symptoms
- High inflammatory markers during attacks
- Asymptomatic between episodes