MEDLEY

Medical AI Ensemble Clinical Decision Report

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Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Familial Mediterranean Fever (FMF) *Evidence: Mediterranean descent, Recurrent fever episodes, Family history of similar symptoms, Elevated CRP, ESR, and WBC during attacks*	E85.0	0.0%	Very Low	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Periodic Fever Syndrome (other types) *Evidence: Recurrent fever episodes, Family history of similar symptoms*	E85.8	11.1%	Alternative (10-29%)
Systemic Juvenile Idiopathic Arthritis (SJIA) *Evidence: Recurrent fever episodes, Joint pain*	M08.2	7.4%	Minority (<10%)
Behçet's Disease *Evidence: Recurrent fever episodes, Mediterranean descent*	M79.0	3.7%	Minority (<10%)
Ankylosing Spondylitis *Evidence: Recurrent fever episodes, Joint pain*	M45	3.7%	Minority (<10%)
Periodic Fever, Aphthous Stomatitis, Pharyngitis, and Adenitis (PFAPA) Syndrome *Evidence: Recurrent fever episodes, Family history of similar symptoms*	I88.1	3.7%	Minority (<10%)
Hyper-IgD Syndrome (HIDS) *Evidence: Recurrent fever episodes, Elevated CRP, ESR, and WBC during attacks*	E85.8	3.7%	Minority (<10%)
TNF Receptor-Associated Periodic Syndrome (TRAPS) *Evidence: Recurrent fever episodes, Family history of similar symptoms*	E85.8	3.7%	Minority (<10%)
Muckle-Wells Syndrome	E85.8	0.0%	Minority (<10%)

Diagnosis	ICD-10	Support	Type
Cryopyrin-Associated Periodic Syndromes (CAPS)	E85.8	0.0%	Minority (<10%)
Mevalonate Kinase Deficiency (MKD)	E85.8	0.0%	Minority (<10%)

Analysis Overview

Models Queried: 7

Successful Responses: 7

Consensus Level: High

Total Cost: <$0.01

■■ Free Model Disclaimer: This analysis was generated using free AI models

Free models may provide suboptimal results. For improved accuracy and reliability, consider using premium models with an API key.

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	Familial	Periodic	Systemic	Behçet's	Ankylosi	Periodic	Hyper-Ig	TNF Rece
Recurrent fever	Strong	Strong	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Abdominal pain	Strong	-	-	-	-	-	-	-
Chest pain	Strong	-	-	-	-	-	-	-
Joint pain	Strong	-	Strong	-	Strong	-	-	-
Elevated CRP, E	Strong	Moderate	Moderate	-	-	-	Moderate	-

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

Primary Recommendations

• Consider Familial Mediterranean Fever (FMF) among differential diagnoses
• Obtain ESR, CRP, WBC count for diagnostic confirmation

Primary Diagnosis Clinical Summaries

■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
Mediterranean descent	Clinical presentation	Key diagnostic indicator
Recurrent fever episodes	Clinical presentation	Key diagnostic indicator
Family history of similar symptoms	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

■ Recommended Tests

Test Name	Type	Priority	Rationale
ESR, CRP, WBC count	Laboratory	Urgent	Diagnostic confirmation
Genetic testing for MEFV gene mutations	Laboratory	Urgent	Diagnostic confirmation

■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Evaluate for Familial Mediterranean Fever (FMF) based on clinical presentation and family history	Medical	Immediate	Critical intervention
Initiate colchicine therapy if FMF is suspected	Medical	Immediate	Critical intervention

■ Medications

Medication	Dosage	Route/Frequency	Indication
Colchicine	0.6 mg	oral / twice daily	Prophylaxis and treatment of FMF attacks

Diagnostic Landscape Analysis

Detailed Diagnostic Analysis

The ensemble analysis identified **Familial Mediterranean Fever (FMF)** as the primary diagnosis with limited consensus among 5 models.

Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Periodic Fever Syndrome (other types) *Evidence: Recurrent fever episodes, Family history of similar symptoms*	11.1%	3 models	Less likely
Systemic Juvenile Idiopathic Arthritis (SJIA) *Evidence: Recurrent fever episodes, Joint pain*	7.4%	2 models	Unlikely
Behçet's Disease *Evidence: Recurrent fever episodes, Mediterranean descent*	3.7%	1 models	Unlikely
Ankylosing Spondylitis *Evidence: Recurrent fever episodes, Joint pain*	3.7%	1 models	Unlikely
Periodic Fever, Aphthous Stomatitis, Pharyngitis, and Adenitis (PFAPA) Syndrome *Evidence: Recurrent fever episodes, Family history of similar symptoms*	3.7%	1 models	Unlikely
Hyper-IgD Syndrome (HIDS) *Evidence: Recurrent fever episodes, Elevated CRP, ESR, and WBC during attacks*	3.7%	1 models	Unlikely
TNF Receptor-Associated Periodic Syndrome (TRAPS) *Evidence: Recurrent fever episodes, Family history of similar symptoms*	3.7%	1 models	Unlikely
Muckle-Wells Syndrome	0.0%	0 models	Unlikely

Minority Opinions

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

- **Systemic Juvenile Idiopathic Arthritis (SJIA)** (ICD-10: Unknown) - 7.4% agreement (2 models)
  Supporting Models: model1, model4
- **Behçet's Disease** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: model4

• **Ankylosing Spondylitis** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: model6

• **Periodic Fever, Aphthous Stomatitis, Pharyngitis, and Adenitis (PFAPA) Syndrome** (ICD-10: R50.9) - 3.7% agreement (1 models)

Supporting Models: model7

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

Supporting Models: model7

• **TNF Receptor-Associated Periodic Syndrome (TRAPS)** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: model7

• **Muckle-Wells Syndrome** (ICD-10: Unknown) - 0.0% agreement (0 models)

Supporting Models:

• **Cryopyrin-Associated Periodic Syndromes (CAPS)** (ICD-10: Unknown) - 0.0% agreement (0 models)

Supporting Models:

• **Mevalonate Kinase Deficiency (MKD)** (ICD-10: Unknown) - 0.0% agreement (0 models)

Supporting Models:

Additional Diagnoses Considered:

• **Periodic Fever Syndrome (other types)** (ICD-10: E85.8) - 71.4% (5 models)

Evidence: Recurrent fever episodes, Family history of similar symptoms

Management Strategies & Clinical Pathways

Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Evaluate for Familial Mediterranean Fever (FMF) based on clinical presentation and family history	Clinical indication	50%
2	Initiate colchicine therapy if FMF is suspected	Clinical indication	50%

Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
ESR, CRP, WBC count	Diagnostic confirmation	Routine	As indicated
Genetic testing for MEFV gene mutations	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
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
llama-3.2-3b-in	USA	Free	Free	Reactive Arthritis	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 Syndrome (other types) (ICD: E85.8) - 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
- Serositis (abdominal pain, pleuritic chest pain)
- Family history of similar symptoms

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

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

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

Primary Diagnosis: Periodic Fever Syndrome (likely Familial Mediterranean Fever - FMF) (ICD-10: M69.8) - Confidence: 0.85

Differential Diagnoses:

- Behçet's Disease (ICD: M79.0) - 0.3
- Systemic Juvenile Idiopathic Arthritis (SJIA) (ICD: M08.0) - 0.25
- Adult-Onset Still's Disease (ICD: M05.8) - 0.2

Key Clinical Findings:

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

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

Primary Diagnosis: Reactive Arthritis (ICD-10: M35.9) - Confidence: 0.8

Differential Diagnoses:

- Ankylosing Spondylitis (ICD: M45.9) - 0.4
- Behçetç Disease (ICD: L20.0) - 0.3
- Crohn's Disease (ICD: K50.9) - 0.2

Key Clinical Findings:

- Recurrent fever, abdominal pain, chest pain, joint pain

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

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

Primary Diagnosis: Familial Mediterranean Fever (FMF) (ICD-10: E85.0) - Confidence: 0.9

Differential Diagnoses:

- Periodic Fever, Aphthous Stomatitis, Pharyngitis, and Adenitis (PFAPA) Syndrome (ICD: I88.1) - 0.3
- Hyper-IgD Syndrome (HIDS) (ICD: E85.8) - 0.2
- TNF Receptor-Associated Periodic Syndrome (TRAPS) (ICD: E85.8) - 0.2

Key Clinical Findings:

- Recurrent fever with abdominal, chest, and joint pain
- Family history of similar symptoms
- Elevated inflammatory markers (CRP, ESR, WBC) during attacks
- Episodic nature with complete remission between attacks