

MEDLEY

Medical AI Ensemble Clinical Decision Report

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Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Familial Mediterranean Fever <i>Evidence: Mediterranean descent, Recurrent fever episodes lasting 1-3 days, Family history (father and paternal uncle), Serositis (abdominal and chest pain)</i>	E85.0	0.0%	Very Low	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Systemic Juvenile Idiopathic Arthritis <i>Evidence: Recurrent fever, Joint involvement, Systemic inflammation</i>	M08.2	7.4%	Minority (<10%)
Behçet's Disease <i>Evidence: Mediterranean descent, Recurrent episodes, Multi-system involvement</i>	M35.2	7.4%	Minority (<10%)
Adult-Onset Still's Disease <i>Evidence: Recurrent fever, Joint pain, Elevated inflammatory markers</i>	M06.1	7.4%	Minority (<10%)
TRAPS (TNF Receptor Associated Periodic Syndrome) <i>Evidence: Periodic fever syndrome, Family history, Recurrent episodes</i>	M04.1	7.4%	Minority (<10%)
Systemic Lupus Erythematosus <i>Evidence: Multi-system involvement, Joint pain, Inflammatory markers</i>	M32.9	7.4%	Minority (<10%)
PFAPA Syndrome <i>Evidence: Periodic fever, Recurrent episodes, Childhood onset</i>	M04.8	7.4%	Minority (<10%)
Hyperimmunoglobulinemia D with Periodic Fever Syndrome <i>Evidence: Periodic fever syndrome, Recurrent episodes</i>	M04.2	3.7%	Minority (<10%)

Diagnosis	ICD-10	Support	Type
Reactive Arthritis <i>Evidence: Joint involvement, Inflammatory response</i>	M45.8	3.7%	Minority (<10%)
Ankylosing Spondylitis <i>Evidence: Joint pain, Inflammatory arthritis</i>	M89.9	3.7%	Minority (<10%)
Crohn's Disease <i>Evidence: Abdominal pain, Inflammatory response</i>	K50.9	3.7%	Minority (<10%)
Rheumatoid Arthritis <i>Evidence: Joint pain, Inflammatory markers</i>	M06.9	3.7%	Minority (<10%)
Sarcoidosis <i>Evidence: Multi-system involvement, Inflammatory response</i>	D86.9	3.7%	Minority (<10%)

Analysis Overview
Models Queried: 21
Successful Responses: 21
Consensus Level: High
Total Estimated Cost: \$0.228

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	Behçet's	TRAPS	SLE
Recurrent fever	Strong	-	Medium	-
Abdominal pain	Strong	-	-	-
Chest pain	-	-	-	-
Joint pain	-	-	-	Medium
Mediterranean d	Strong	-	-	-
Family history	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

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

Primary Recommendations

- Consider Familial Mediterranean Fever among differential diagnoses
- Confirm FMF diagnosis with genetic testing
- Assess for acute attack symptoms
- Evaluate for amyloidosis complications
- Obtain MEFV gene mutation analysis 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 lasting 1-3 days every 2-3 weeks	Clinical presentation	Key diagnostic indicator
Family history (father and paternal uncle with similar symptoms)	Clinical presentation	Key diagnostic indicator
Serositis (severe abdominal pain and chest pain with breathing difficulties)	Clinical presentation	Key diagnostic indicator
Joint pain affecting knees and ankles	Clinical presentation	Key diagnostic indicator

■ Recommended Tests

Test Name	Type	Priority	Rationale
MEFV gene mutation analysis	Laboratory	Urgent	Diagnostic confirmation
Serum amyloid A protein	Laboratory	Urgent	Diagnostic confirmation
Complete blood count during attack	Laboratory	Urgent	Diagnostic confirmation
C-reactive protein and ESR during attack	Laboratory	Urgent	Diagnostic confirmation
24-hour urine protein to screen for amyloidosis	Laboratory	Urgent	Diagnostic confirmation

■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Confirm FMF diagnosis with genetic testing	Medical	Immediate	Critical intervention
Assess for acute attack symptoms	Medical	Immediate	Critical intervention

Intervention	Category	Urgency	Clinical Reasoning
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
NSAIDs	as needed	oral / during acute attacks	symptomatic relief of fever and inflammation

Diagnostic Landscape Analysis

Detailed Diagnostic Analysis

The ensemble analysis identified **Familial Mediterranean Fever** as the primary diagnosis with 0.0% consensus among 9 models.

Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Systemic Juvenile Idiopathic Arthritis <i>Evidence: Recurrent fever, Joint involvement, Systemic inflammation</i>	7.4%	2 models	Unlikely
Behçet's Disease <i>Evidence: Mediterranean descent, Recurrent episodes, Multi-system involvement</i>	7.4%	2 models	Unlikely
Adult-Onset Still's Disease <i>Evidence: Recurrent fever, Joint pain, Elevated inflammatory markers</i>	7.4%	2 models	Unlikely
TRAPS (TNF Receptor Associated Periodic Syndrome) <i>Evidence: Periodic fever syndrome, Family history, Recurrent episodes</i>	7.4%	2 models	Unlikely
Systemic Lupus Erythematosus <i>Evidence: Multi-system involvement, Joint pain, Inflammatory markers</i>	7.4%	2 models	Unlikely
PFAPA Syndrome <i>Evidence: Periodic fever, Recurrent episodes, Childhood onset</i>	7.4%	2 models	Unlikely
Hyperimmunoglobulinemia D with Periodic Fever Syndrome <i>Evidence: Periodic fever syndrome, Recurrent episodes</i>	3.7%	1 models	Unlikely
Reactive Arthritis <i>Evidence: Joint involvement, Inflammatory response</i>	3.7%	1 models	Unlikely

Minority Opinions

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

- **Systemic Juvenile Idiopathic Arthritis** (ICD-10: Unknown) - 7.4% agreement (2 models)
Supporting Models: Model1, Model17
- **Behçet's Disease** (ICD-10: Unknown) - 7.4% agreement (2 models)
Supporting Models: Model1, Model9

- **Adult-Onset Still's Disease** (ICD-10: Unknown) - 7.4% agreement (2 models)

Supporting Models: Model7, Model20

- **TRAPS (TNF Receptor Associated Periodic Syndrome)** (ICD-10: Unknown) - 7.4% agreement (2 models)

Supporting Models: Model6, Model10

- **Systemic Lupus Erythematosus** (ICD-10: M32.9) - 7.4% agreement (2 models)

Supporting Models: Model7, Model19

- **PFAPA Syndrome** (ICD-10: D89.1) - 7.4% agreement (2 models)

Supporting Models: Model6, Model20

- **Hyperimmunoglobulinemia D with Periodic Fever Syndrome** (ICD-10: R50.9) - 3.7% agreement (1 models)

Supporting Models: Model10

- **Reactive Arthritis** (ICD-10: M02.9) - 3.7% agreement (1 models)

Supporting Models: Model9

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

Supporting Models: Model9

- **Crohn's Disease** (ICD-10: K50.9) - 3.7% agreement (1 models)

Supporting Models: Model9

- **Rheumatoid Arthritis** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model19

- **Sarcoidosis** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model19

Additional Diagnoses Considered:

Management Strategies & Clinical Pathways

Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Confirm FMF diagnosis with genetic testing	Clinical indication	50%
2	Assess for acute attack symptoms	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
Serum amyloid A protein	Diagnostic confirmation	Routine	As indicated
Complete blood count during attack	Diagnostic confirmation	Routine	As indicated
C-reactive protein and ESR during attack	Diagnostic confirmation	Routine	As indicated
24-hour urine protein to screen for amyloidosis	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
gpt-4o	USA	Premium	\$0.014	Familial Mediterranean Fever	Comprehensive
gpt-4o-mini	USA	Budget	<\$0.01	Familial Mediterranean Fever	General
gpt-oss-120b	USA	Mid-Range	<\$0.01	Familial Mediterranean Fever	Standard
claude-3-opus-2	USA	Premium	\$0.084	Familial Mediterranean Fever	Comprehensive
gemini-2.5-pro	USA	Premium	\$0.026	with supporting data (including the ICD-10 code and confidence level)	General
gemini-2.5-flas	USA	Budget	<\$0.01	Familial Mediterranean Fever	General
gemini-2.5-flas	USA	Budget	<\$0.01	Familial Mediterranean Fever	General
gemma-2-9b-it	USA	Budget	<\$0.01	Familial Mediterranean Fever	Standard
llama-3.2-3b-in	USA	Budget	<\$0.01	Behçet's disease	General
mistral-large-2	France	Premium	\$0.012	Familial Mediterranean Fever	Standard
mistral-7b-inst	France	Budget	<\$0.01	Familial Mediterranean Fever	General
deepseek-chat	China	Budget	<\$0.01	Familial Mediterranean Fever	Regional
deepseek-r1	China	Budget	<\$0.01	Familial Mediterranean Fever	Regional
qwen-2.5-coder-	China	Mid-Range	<\$0.01	Periodic Fever, Aphthous Stomatitis, Pharyngitis, Adenitis (PFAPA) Syndrome	Regional
command-r-plus	Canada	Premium	\$0.018	Familial Mediterranean Fever	Standard
command-r	Canada	Mid-Range	<\$0.01	Familial Mediterranean Fever	Standard
jamba-large-1.7	Israel	Premium	<\$0.01	Familial Mediterranean Fever	Standard
sonar-deep-rese	USA	Premium	\$0.010	Familial Mediterranean Fever	Standard
wizardlm-2-8x22	USA	Mid-Range	<\$0.01	Familial Mediterranean Fever	Standard
grok-2-1212	USA	Premium	<\$0.01	Familial Mediterranean Fever	Standard
grok-4	USA	Premium	\$0.034	Familial Mediterranean Fever	Alternative

Total Estimated Cost: \$0.228

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. gpt-4o (USA, Released: 2024-05-13)

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

Differential Diagnoses:

- Systemic Juvenile Idiopathic Arthritis (ICD: M08.2) - 0.4
- Behçet's Disease (ICD: M35.2) - 0.3
- Adult-Onset Still's Disease (ICD: M06.1) - 0.3

Key Clinical Findings:

- Recurrent episodes of fever lasting 1-3 days
- Severe abdominal pain during episodes
- Chest pain with breathing difficulties
- Joint pain affecting knees and ankles

2. gpt-4o-mini (USA, Released: 2024-07-18)

Primary Diagnosis: Familial Mediterranean Fever (ICD-10: E85.9) - Confidence: 0.85

Differential Diagnoses:

- Periodic Fever Syndrome (ICD: E85.8) - 0.7
- Still's Disease (ICD: M08.1) - 0.6
- Systemic Lupus Erythematosus (ICD: M32.9) - 0.5

Key Clinical Findings:

- Recurrent fever episodes
- Elevated CRP, ESR, and WBC during episodes
- Family history of similar symptoms

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

4. claude-3-opus-2 (USA, Released: 2024-02-29)

Primary Diagnosis: Familial Mediterranean Fever (ICD-10: E85.0) - Confidence: 0.95

Differential Diagnoses:

- Systemic Juvenile Idiopathic Arthritis (ICD: M08.2) - 0.4
- Adult-Onset Still's Disease (ICD: M06.1) - 0.3

- Behçet's Disease (ICD: M35.2) - 0.2

Key Clinical Findings:

- Recurrent fever episodes lasting 1-3 days
- Severe abdominal pain during episodes
- Chest pain with breathing difficulties
- Joint pain affecting knees and ankles

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

6. gemini-2.5-flas (USA, Released: 2024-12-19)

Primary Diagnosis: Familial Mediterranean Fever (ICD-10: E85.0) - Confidence: 0.95

Differential Diagnoses:

- Periodic fever, aphthous stomatitis, pharyngitis, and cervical adenitis (PFAPA) syndrome (ICD: M04.8) - 0.4
- TRAPS syndrome (TNF Receptor Associated Periodic Syndrome) (ICD: E85.8) - 0.35
- Behçet's disease (ICD: M35.2) - 0.25

Key Clinical Findings:

- Recurrent episodes of fever (1-3 days duration)
- Severe abdominal pain during episodes
- Chest pain with breathing difficulties (pleurisy/pericarditis)
- Joint pain (knees and ankles - arthritis/arthralgia)

7. gemini-2.5-flas (USA, Released: 2024-12-19)

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

Differential Diagnoses:

- Systemic Lupus Erythematosus (ICD: M32.9) - 0.5
- Adult-Onset Still's Disease (ICD: M06.1) - 0.4
- Inflammatory Bowel Disease (e.g., Crohn's Disease) (ICD: K50.90) - 0.3

Key Clinical Findings:

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

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

Primary Diagnosis: Familial Mediterranean Fever (FMF) (ICD-10: M31.0) - Confidence: 0.85

Differential Diagnoses:

- Autoinflammatory Syndromes (e.g., TNF-associated periodic syndromes) (ICD: M30.9) - 0.1
- Periodic Fever Syndromes (e.g., Cryopyrin-associated periodic syndromes) (ICD: M30.9) - 0.08
- Uveitis (ICD: H20) - 0.07

Key Clinical Findings:

- Recurrent episodes of fever, abdominal pain, chest pain with breathing difficulties, and joint pain
- Family history of similar symptoms
- Elevated CRP, ESR, and WBC during episodes
- Asymptomatic between attacks

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

Primary Diagnosis: Behçet's disease (ICD-10: M35.3) - Confidence: 0.8

Differential Diagnoses:

- Reactive arthritis (ICD: M45.8) - 0.2
- Ankylosing spondylitis (ICD: M89.9) - 0.1
- Crohn's disease (ICD: K50.9) - 0.1

Key Clinical Findings:

- Recurrent episodes of fever, abdominal pain, and joint pain
- Family history of similar symptoms
- Elevated CRP, ESR, and WBC during attacks

10. mistral-large-2 (France, Released: 2024-11-01)

Primary Diagnosis: Familial Mediterranean Fever (ICD-10: E85.0) - Confidence: 0.95

Differential Diagnoses:

- Tumor Necrosis Factor Receptor Associated Periodic Syndrome (TRAPS) (ICD: M04.1) - 0.6
- Hyperimmunoglobulinemia D with Periodic Fever Syndrome (HIDS) (ICD: M04.0) - 0.5
- Cyclic Neutropenia (ICD: D70) - 0.4

Key Clinical Findings:

- Recurrent episodes of fever lasting 1-3 days
- Severe abdominal pain during episodes
- Chest pain with breathing difficulties
- Joint pain affecting knees and ankles

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

Primary Diagnosis: Familial Mediterranean Fever (FMF) (ICD-10: M30.0) - Confidence: 0.8

Differential Diagnoses:

- Reactive Arthritis (ICD: M40.3) - 0.4
- Ankylosing Spondylitis (ICD: M45.0) - 0.3
- Inflammatory Bowel Disease (IBD) (ICD: K50.0) - 0.3

Key Clinical Findings:

- Recurrent fever, abdominal pain, chest pain, joint pain, familial history
- Elevated CRP, ESR, and WBC

12. deepseek-chat (China, Released: 2024-12-20)

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

Differential Diagnoses:

- Periodic Fever Syndrome (ICD: E85.8) - 0.7
- Acute Appendicitis (ICD: K35.80) - 0.3
- Systemic Lupus Erythematosus (ICD: M32.9) - 0.2

Key Clinical Findings:

- Recurrent episodes of fever lasting 1-3 days
- Severe abdominal pain during episodes
- Chest pain with breathing difficulties
- Joint pain affecting knees and ankles

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

14. qwen-2.5-coder- (China, Released: 2024-11-12)

Primary Diagnosis: Periodic Fever, Aphthous Stomatitis, Pharyngitis, Adenitis (PFAPA) Syndrome (ICD-10: D69.1) - Confidence: 0.85

Differential Diagnoses:

- Mediterranean Fever (FMF) (ICD: M05.0) - 0.75
- Takayasu Arteritis (ICD: I70.0) - 0.6
- Still's Disease (ICD: M33.0) - 0.5

Key Clinical Findings:

- Recurrent episodes of fever
- Severe abdominal pain
- Chest pain with breathing difficulties
- Joint pain affecting knees and ankles

15. command-r-plus (Canada, Released: 2024-04-04)

Primary Diagnosis: Familial Mediterranean Fever (FMF) (ICD-10: M84.0) - Confidence: 0.8

Differential Diagnoses:

- Periodic Fever Syndrome (ICD: R50.9) - 0.6
- Autoinflammatory Syndrome (ICD: D89.81) - 0.55
- Behçet's Disease (ICD: M35.2) - 0.45

Key Clinical Findings:

- Recurrent fever episodes lasting 1-3 days
- Abdominal and chest pain, breathing difficulties
- Joint pain in knees and ankles
- Positive family history of similar symptoms

16. command-r (Canada, Released: 2024-03-11)

Primary Diagnosis: Familial Mediterranean Fever (ICD-10: M30.9) - Confidence: 0.85

Differential Diagnoses:

- Periodic Fever, Aphthous Stomatitis, Pharyngitis, and Adenitis Syndrome (ICD: R50.8) - 0.75
- Rheumatoid Arthritis (ICD: M05.9) - 0.6
- Ankylosing Spondylitis (ICD: M45.9) - 0.55

Key Clinical Findings:

- Recurrent fever episodes
- Abdominal pain
- Chest pain with breathing issues
- Joint pain in knees and ankles

17. jamba-large-1.7 (Israel, Released: 2025-07-01)

Primary Diagnosis: Familial Mediterranean Fever (FMF) (ICD-10: M07.1) - Confidence: 0.9

Differential Diagnoses:

- Systemic Juvenile Idiopathic Arthritis (SJIA) (ICD: M08.2) - 0.7
- Periodic Fever, Aphthous Stomatitis, Pharyngitis, Adenitis (PFAPA) Syndrome (ICD: D75.89) - 0.6
- Acute Rheumatic Fever (ICD: I00) - 0.5

Key Clinical Findings:

- Recurrent episodes of fever lasting 1-3 days
- Severe abdominal pain during episodes
- Chest pain with breathing difficulties

- Joint pain affecting knees and ankles

18. sonar-deep-rese (USA, Released: 2025-03-07)

19. wizardlm-2-8x22 (USA, Released: 2024-04-15)

Primary Diagnosis: Familial Mediterranean Fever (ICD-10: M02.01) - Confidence: 0.8

Differential Diagnoses:

- Systemic Lupus Erythematosus (ICD: M32.10) - 0.5
- Rheumatoid Arthritis (ICD: M06.9) - 0.4
- Sarcoidosis (ICD: D86.9) - 0.3

Key Clinical Findings:

- Recurrent fever
- Severe abdominal pain
- Chest pain with breathing difficulties
- Joint pain affecting knees and ankles

20. grok-2-1212 (USA, Released: 2024-12-12)

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

Differential Diagnoses:

- Periodic Fever, Aphthous Stomatitis, Pharyngitis, and Adenitis (PFAPA) Syndrome (ICD: M04.8) - 0.6
- Adult-Onset Still's Disease (ICD: M06.1) - 0.5
- Crohn's Disease (ICD: K50.9) - 0.4

Key Clinical Findings:

- Recurrent fever episodes
- Severe abdominal pain
- Chest pain with breathing difficulties
- Joint pain in knees and ankles

21. grok-4 (USA, Released: 2024-12-26)

Primary Diagnosis: Familial Mediterranean Fever (ICD-10: E85.0) - Confidence: 0.95

Differential Diagnoses:

- Tumor Necrosis Factor Receptor-Associated Periodic Syndrome (ICD: M04.1) - 0.4
- Hyper-IgD Syndrome (ICD: M04.1) - 0.3
- Behçet Disease (ICD: M35.2) - 0.25

Key Clinical Findings:

- Recurrent fever episodes with abdominal, chest, and joint pain
- Mediterranean descent and positive family history
- Elevated inflammatory markers during attacks
- Asymptomatic between episodes, onset in childhood