# MEDLEY

## Medical AI Ensemble Clinical Decision Report

| Case ID: custom_20250911_193342 | Title: A 28-year-old male of Mediterranean descent presents with: -... | Generated: 2025-09-11 19:36 |
|---|---|---|

## Primary Diagnostic Consensus

| Diagnosis | ICD-10 | Agreement | Confidence | Status |
|---|---|---|---|---|
| Familial Mediterranean Fever (FMF)<br>*Evidence: Mediterranean descent, Recurrent febrile episodes with abdominal pain, chest pain, and joint pain, 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 |
|---|---|---|---|
| Systemic Juvenile Idiopathic Arthritis (sJIA)<br>*Evidence: Recurrent febrile episodes with joint pain* | M08.2 | 11.1% | Alternative (10-29%) |
| Periodic Fever Syndrome (other types)<br>*Evidence: Recurrent febrile episodes with similar symptoms* | E85.8 | 7.4% | Minority (<10%) |
| Adult-Onset Still's Disease<br>*Evidence: Recurrent febrile episodes with joint pain* | M35.3 | 3.7% | Minority (<10%) |
| Ankylosing Spondylitis<br>*Evidence: Recurrent febrile episodes with joint pain* | M45.9 | 3.7% | Minority (<10%) |
| Autoinflammatory Syndrome (e.g., TRAPS)<br>*Evidence: Recurrent febrile episodes with similar symptoms* | M35.8 | 3.7% | Minority (<10%) |
| Behçet's Disease | M35.2 | 0.0% | Minority (<10%) |
| Reactive Arthritis | M02.7 | 0.0% | Minority (<10%) |
| Systemic Lupus Erythematosus (SLE) | M32.9 | 0.0% | Minority (<10%) |
| Rheumatoid Arthritis | M05.9 | 0.0% | Minority (<10%) |
| Gout | M10.0 | 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 | Adult-On | Ankylosi | Autoinfl |
|---|---|---|---|---|---|---|
| Recurrent febri | Strong | Moderate | Moderate | Moderate | Moderate | Moderate |
| Abdominal pain | Strong | - | - | - | - | - |
| Chest pain | Strong | - | - | - | - | - |
| Joint pain | Strong | - | Moderate | Moderate | Moderate | - |
| Elevated CRP, E | 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

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

## Primary Recommendations

• Consider Familial Mediterranean Fever (FMF) among differential diagnoses
• Obtain Genetic testing for MEFV mutations for diagnostic confirmation

# Primary Diagnosis Clinical Summaries

## ■ Key Clinical Findings

| Finding | Supporting Evidence | Clinical Reasoning |
|---|---|---|
| Mediterranean descent | Clinical presentation | Key diagnostic indicator |
| Recurrent febrile episodes with abdominal pain, chest pain, and joint pain | 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 |
| Genetic testing pending | Clinical presentation | Key diagnostic indicator |

## ■ Recommended Tests

| Test Name | Type | Priority | Rationale |
|---|---|---|---|
| Genetic testing for MEFV mutations | Laboratory | Urgent | Diagnostic confirmation |
| Erythrocyte sedimentation rate (ESR) | Laboratory | Urgent | Diagnostic confirmation |

## ■ Immediate Management

| Intervention | Category | Urgency | Clinical Reasoning |
|---|---|---|---|
| Evaluate for signs of peritonitis or pleuritis | 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 FMF attacks |

# Diagnostic Landscape Analysis

## Detailed Diagnostic Analysis

The ensemble analysis identified **Familial Mediterranean Fever (FMF)** as the primary diagnosis with limited consensus among 4 models.

## Detailed Alternative Analysis

| Diagnosis | Support | Key Evidence | Clinical Significance |
|---|---|---|---|
| Systemic Juvenile Idiopathic Arthritis (sJIA)<br>*Evidence: Recurrent febrile episodes with joint pain* | 11.1% | 3 models | Less likely |
| Periodic Fever Syndrome (other types)<br>*Evidence: Recurrent febrile episodes with similar symptoms* | 7.4% | 2 models | Unlikely |
| Adult-Onset Still's Disease<br>*Evidence: Recurrent febrile episodes with joint pain* | 3.7% | 1 models | Unlikely |
| Ankylosing Spondylitis<br>*Evidence: Recurrent febrile episodes with joint pain* | 3.7% | 1 models | Unlikely |
| Autoinflammatory Syndrome (e.g., TRAPS)<br>*Evidence: Recurrent febrile episodes with similar symptoms* | 3.7% | 1 models | Unlikely |
| Behçet's Disease | 0.0% | 0 models | Unlikely |
| Reactive Arthritis | 0.0% | 0 models | Unlikely |
| Systemic Lupus Erythematosus (SLE) | 0.0% | 0 models | Unlikely |

## Minority Opinions

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

- **Periodic Fever Syndrome (other types)** (ICD-10: R50.9) - 7.4% agreement (2 models)
  Supporting Models: Unknown, Unknown
- **Adult-Onset Still's Disease** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Unknown
- **Ankylosing Spondylitis** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Unknown
- **Autoinflammatory Syndrome (e.g., TRAPS)** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Unknown
- **Behçet's Disease** (ICD-10: Unknown) - 0.0% agreement (0 models)

Supporting Models:

- **Reactive Arthritis** (ICD-10: M02.9) - 0.0% agreement (0 models)

  Supporting Models:

- **Systemic Lupus Erythematosus (SLE)** (ICD-10: M32.9) - 0.0% agreement (0 models)

  Supporting Models:

- **Rheumatoid Arthritis** (ICD-10: Unknown) - 0.0% agreement (0 models)

  Supporting Models:

- **Gout** (ICD-10: Unknown) - 0.0% agreement (0 models)

  Supporting Models:

**Additional Diagnoses Considered:**

- **Systemic Juvenile Idiopathic Arthritis (sJIA)** (ICD-10: M08.2) - 42.9% (3 models)

  Evidence: Recurrent febrile episodes with joint pain

# Management Strategies & Clinical Pathways

## Immediate Actions Required

| Priority | Action | Rationale | Consensus |
|---|---|---|---|
| 1 | Evaluate for signs of peritonitis or pleuritis | Clinical indication | 50% |
| 2 | Initiate colchicine therapy | Clinical indication | 50% |

## Recommended Diagnostic Tests

| Test | Purpose | Priority | Timing |
|---|---|---|---|
| Genetic testing for MEFV mutations | Diagnostic confirmation | Routine | As indicated |
| Erythrocyte sedimentation rate (ESR) | 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-3-12b-it | USA | Unknown | <$0.01 | Periodic Fever Syndrome (likely Familial Mediterranean Fever - FMF) | General |
| llama-3.2-3b-in | USA | Free | Free | Behçetç disease | General |
| mistral-7b-inst | France | Free | Free | Familial Mediterranean Fever | General |
| gpt-oss-20b | USA | Unknown | <$0.01 | 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) - 0.6
- Systemic Juvenile Idiopathic Arthritis (ICD: M08.2) - 0.4
- Inflammatory Bowel Disease (ICD: K50.9) - 0.3

**Key Clinical Findings:**

- Mediterranean descent
- Recurrent self-limited fever episodes
- Severe abdominal pain
- Chest pain with breathing difficulties

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

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

**Primary Diagnosis:** Behçetç disease (ICD-10: L20.0) - Confidence: 0.8

**Differential Diagnoses:**

- Ankylosing spondylitis (ICD: M45.0) - 0.4
- Reactive arthritis (ICD: M05.9) - 0.35
- Spondyloarthritis (ICD: M45.9) - 0.3

**Key Clinical Findings:**

- Recurrent episodes of fever, severe abdominal pain, chest pain with breathing difficulties, joint pain

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

## 6. gpt-oss-20b (USA, Released: 2024-05-13)

## 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:**

- Autoinflammatory Syndrome (e.g., TRAPS) (ICD: M35.8) - 0.3
- Systemic Juvenile Idiopathic Arthritis (sJIA) (ICD: M08.2) - 0.2
- Hyper-IgD Syndrome (HIDS) (ICD: D89.1) - 0.1

**Key Clinical Findings:**

- Recurrent febrile episodes with abdominal/chest pain
- Joint involvement (knees/ankles)
- Family history of similar symptoms
- Elevated inflammatory markers during attacks (CRP, ESR, WBC)