# MEDLEY

## Medical AI Ensemble Clinical Decision Report

| Case ID: custom_20250911_192300 | Title: A 28-year-old male of Mediterranean descent presents with: -... | Generated: 2025-09-11 19:24 |
|---|---|---|

## Primary Diagnostic Consensus

| Diagnosis | ICD-10 | Agreement | Confidence | Status |
|---|---|---|---|---|
| Familial Mediterranean Fever (FMF)<br>*Evidence: Recurrent fever episodes 1-3 days, Severe abdominal pain, Chest pain with breathing difficulties, Joint pain in knees and ankles* | E85.0 | 0.0% | Very Low | PRIMARY |

### Alternative & Minority Diagnoses

| Diagnosis | ICD-10 | Support | Type |
|---|---|---|---|
| Periodic Fever Syndrome (other types)<br>*Evidence: Recurrent fever episodes, Family history* | E85.9 | 3.7% | Minority (<10%) |
| Systemic Juvenile Idiopathic Arthritis<br>*Evidence: Recurrent fever episodes, Joint pain* | M08.2 | 3.7% | Minority (<10%) |
| Reactive Arthritis<br>*Evidence: Recurrent fever episodes, Joint pain* | M40.0 | 3.7% | Minority (<10%) |
| Behçet's Disease<br>*Evidence: Recurrent fever episodes, Mucocutaneous lesions* | M35.2 | 0.0% | Minority (<10%) |
| Takayasu's Arteritis<br>*Evidence: Recurrent fever episodes, Vascular involvement* | M31.0 | 0.0% | Minority (<10%) |
| Systemic Lupus Erythematosus<br>*Evidence: Recurrent fever episodes, Multi-organ involvement* | M32.9 | 0.0% | Minority (<10%) |
| Rheumatoid Arthritis<br>*Evidence: Recurrent joint pain, Elevated inflammatory markers* | M05.9 | 0.0% | Minority (<10%) |
| Gout<br>*Evidence: Recurrent joint pain, Elevated uric acid levels* | M10.0 | 0.0% | Minority (<10%) |

| Diagnosis | ICD-10 | Support | Type |
|---|---|---|---|
| Sarcoidosis<br>*Evidence: Recurrent fever episodes, Granulomatous inflammation* | D86.9 | 0.0% | Minority (<10%) |
| Infectious Mononucleosis<br>*Evidence: Recurrent fever episodes, Lymphadenopathy* | B27.8 | 0.0% | Minority (<10%) |

## Analysis Overview

Models Queried: 3

Successful Responses: 3

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 | Reactive | Behçet's | Takayasu | SLE | Rheumato |
|---|---|---|---|---|---|---|---|---|
| Recurrent fever | Strong | Moderate | Moderate | Moderate | - | - | - | - |
| Severe abdomina | Strong | - | - | - | - | - | - | - |
| Chest pain with | Strong | - | - | - | - | - | - | - |
| Joint pain in k | Strong | - | Moderate | Moderate | - | - | - | - |
| Family history | Strong | Moderate | - | - | - | - | - | - |
| Elevated CRP, E | Strong | - | - | - | - | - | - | - |
| Asymptomatic be | Strong | - | - | - | - | - | - | - |
| Symptoms starte | Strong | - | - | - | - | - | - | - |
| Mediterranean d | Strong | - | - | - | - | - | - | - |
| Pending genetic | 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

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

## Primary Recommendations

• Consider Familial Mediterranean Fever (FMF) among differential diagnoses
• Obtain Complete blood count (CBC) for diagnostic confirmation

# Primary Diagnosis Clinical Summaries

## ■ Key Clinical Findings

| Finding | Supporting Evidence | Clinical Reasoning |
|---|---|---|
| Recurrent fever episodes 1-3 days | Clinical presentation | Key diagnostic indicator |
| Severe abdominal pain | Clinical presentation | Key diagnostic indicator |
| Chest pain with breathing difficulties | Clinical presentation | Key diagnostic indicator |
| Joint pain in knees and ankles | Clinical presentation | Key diagnostic indicator |
| Family history of similar symptoms | Clinical presentation | Key diagnostic indicator |

## ■ Recommended Tests

| Test Name | Type | Priority | Rationale |
|---|---|---|---|
| Complete blood count (CBC) | Laboratory | Urgent | Diagnostic confirmation |
| C-reactive protein (CRP) | Laboratory | Urgent | Diagnostic confirmation |
| Erythrocyte sedimentation rate (ESR) | Laboratory | Urgent | Diagnostic confirmation |
| Renal function tests | Laboratory | Urgent | Diagnostic confirmation |
| Urine analysis | Laboratory | Urgent | Diagnostic confirmation |

## ■ Immediate Management

| Intervention | Category | Urgency | Clinical Reasoning |
|---|---|---|---|
| Initiate genetic testing for MEFV gene mutations | Medical | Immediate | Critical intervention |
| Evaluate for signs of amyloidosis | Medical | Immediate | Critical intervention |

## ■ Medications

| Medication | Dosage | Route/Frequency | Indication |
|---|---|---|---|
| Colchicine | 1.2 mg | oral / daily | Prevention of FMF attacks and amyloidosis |

# Diagnostic Landscape Analysis

## Detailed Diagnostic Analysis

The ensemble analysis identified **Familial Mediterranean Fever (FMF)** as the primary diagnosis with limited consensus among 3 models.

## Detailed Alternative Analysis

| Diagnosis | Support | Key Evidence | Clinical Significance |
|---|---|---|---|
| Periodic Fever Syndrome (other types)<br>*Evidence: Recurrent fever episodes, Family history* | 3.7% | 1 models | Unlikely |
| Systemic Juvenile Idiopathic Arthritis<br>*Evidence: Recurrent fever episodes, Joint pain* | 3.7% | 1 models | Unlikely |
| Reactive Arthritis<br>*Evidence: Recurrent fever episodes, Joint pain* | 3.7% | 1 models | Unlikely |
| Behçet's Disease<br>*Evidence: Recurrent fever episodes, Mucocutaneous lesions* | 0.0% | 0 models | Unlikely |
| Takayasu's Arteritis<br>*Evidence: Recurrent fever episodes, Vascular involvement* | 0.0% | 0 models | Unlikely |
| Systemic Lupus Erythematosus<br>*Evidence: Recurrent fever episodes, Multi-organ involvement* | 0.0% | 0 models | Unlikely |
| Rheumatoid Arthritis<br>*Evidence: Recurrent joint pain, Elevated inflammatory markers* | 0.0% | 0 models | Unlikely |
| Gout<br>*Evidence: Recurrent joint pain, Elevated uric acid levels* | 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) - 3.7% agreement (1 models)
  Supporting Models: model1
- **Systemic Juvenile Idiopathic Arthritis** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: model1
- **Reactive Arthritis** (ICD-10: M02.9) - 3.7% agreement (1 models)
  Supporting Models: model2

- **Behçet's Disease** (ICD-10: Unknown) - 0.0% agreement (0 models)
  Supporting Models:
- **Takayasu's Arteritis** (ICD-10: Unknown) - 0.0% agreement (0 models)
  Supporting Models:
- **Systemic Lupus Erythematosus** (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:
- **Sarcoidosis** (ICD-10: Unknown) - 0.0% agreement (0 models)
  Supporting Models:
- **Infectious Mononucleosis** (ICD-10: Unknown) - 0.0% agreement (0 models)
  Supporting Models:

**Additional Diagnoses Considered:**

# Management Strategies & Clinical Pathways

## Immediate Actions Required

| Priority | Action | Rationale | Consensus |
|---|---|---|---|
| 1 | Initiate genetic testing for MEFV gene mutations | Clinical indication | 50% |
| 2 | Evaluate for signs of amyloidosis | Clinical indication | 50% |

## Recommended Diagnostic Tests

| Test | Purpose | Priority | Timing |
|---|---|---|---|
| Complete blood count (CBC) | Diagnostic confirmation | Routine | As indicated |
| C-reactive protein (CRP) | Diagnostic confirmation | Routine | As indicated |
| Erythrocyte sedimentation rate (ESR) | Diagnostic confirmation | Routine | As indicated |
| Renal function tests | Diagnostic confirmation | Routine | As indicated |
| Urine analysis | 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 |
| mistral-7b-inst | France | Free | Free | Familial Mediterranean Fever | General |
| gpt-oss-20b | USA | Unknown | <$0.01 | 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: E85.9) - 0.6
- 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 (1-3 days)
- Severe abdominal pain
- Chest pain with pleurisy

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

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