

# MEDLEY

## Medical AI Ensemble Clinical Decision Report

Case ID: tmpouy5n414

Title: Custom Case Analysis

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16:10

### Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Acute Decompensated Heart Failure due to Ischemic Cardiomyopathy <i>Evidence: History of prior anterior MI, Low EF of 25% on echo, Anterior wall akinesis, Elevated BNP</i>	I50.21	0.0%	Very Low	PRIMARY

### Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Acute Coronary Syndrome <i>Evidence: History of prior MI, ECG showing Q waves in V1-V4, Cardiac risk factors</i>	I24.9	3.7%	Minority (<10%)
Pulmonary Embolism <i>Evidence: Exertional dyspnea, Tachycardia, Acute respiratory symptoms</i>	I26.99	3.7%	Minority (<10%)

Analysis Overview
Models Queried: 4
Successful Responses: 4
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	Acute De	Acute Co	Pulmonar
Exertional dysp	Strong	-	Medium
Orthopnea	Strong	-	-
Paroxysmal noct	Strong	-	-
Tachycardia	-	Medium	Medium
JVD	Strong	-	-
Crackles	Strong	-	-
S3 gallop	Strong	-	-

Legend: +++ Strong association, ++ Moderate, + Weak, - Not typical

## Diagnostic Decision Tree

Step	Action	If Positive	If Negative
1	Initial Laboratory Tests	→ Confirm suspicion	→ Broaden differential
2	Imaging Studies	→ Identify pathology	→ Consider specialized tests
3	Specialized Testing	→ Definitive diagnosis	→ Empiric treatment
4	Treatment Trial	→ Continue if effective	→ Reconsider diagnosis

# Executive Summary

## Case Description

A 68-year-old man with a history of long-standing hypertension, poorly controlled type 2 diabetes mellitus, and prior anterior myocardial infarction presents with progressive exertional dyspnea, orthopnea, and paroxysmal nocturnal dyspnea over the past two weeks. On examination, he is tachycardic and hypertensive, with jugular venous distension, bibasilar crackles, and an S3 gallop. ECG shows sinus tachycardia with Q waves in leads V1–V4, and transthoracic echocardiography reveals a left ventricular ejection fraction of 25% with akinesis of the anterior wall and moderate functional mitral regurgitation. Laboratory studies demonstrate elevated BNP and mild renal impairment. He is admitted for acute decompensated heart failure on a background of ischemic cardiomyopathy, with consideration for optimization of guideline-directed medical therapy, management of volume overload, and evaluation for device therapy.

## Key Clinical Findings

## Primary Recommendations

- Consider Acute Decompensated Heart Failure due to Ischemic Cardiomyopathy among differential diagnoses
- Obtain ECG for diagnostic confirmation

## Primary Diagnosis Clinical Summaries

### ■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
Prior anterior MI	Clinical presentation	Key diagnostic indicator
Low EF 25%	Clinical presentation	Key diagnostic indicator
Anterior wall akinesis	Clinical presentation	Key diagnostic indicator
Elevated BNP	Clinical presentation	Key diagnostic indicator
S3 gallop	Clinical presentation	Key diagnostic indicator

### ■ Recommended Tests

Test Name	Type	Priority	Rationale
ECG	Laboratory	Urgent	Diagnostic confirmation
Transthoracic echocardiography	Laboratory	Urgent	Diagnostic confirmation
BNP/NT-proBNP	Laboratory	Urgent	Diagnostic confirmation
Troponin	Laboratory	Urgent	Diagnostic confirmation
Basic metabolic panel	Laboratory	Urgent	Diagnostic confirmation

### ■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Oxygen therapy to maintain SpO2 >90%	Medical	Immediate	Critical intervention
IV diuresis with furosemide	Medical	Immediate	Critical intervention
Cardiac monitoring	Medical	Immediate	Critical intervention
Sit patient upright	Medical	Immediate	Critical intervention

### ■ Medications

Medication	Dosage	Route/Frequency	Indication
Furosemide	20-40 mg IV	IV / q6-12h	Diuresis for volume overload

Medication	Dosage	Route/Frequency	Indication
Nitroglycerin	10-20 mcg/min IV	IV / Continuous infusion	Afterload reduction in hypertension

## Diagnostic Landscape Analysis

### Detailed Diagnostic Analysis

The ensemble analysis identified **Acute Decompensated Heart Failure due to Ischemic Cardiomyopathy** as the primary diagnosis with limited consensus among 1 models.

### Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Acute Coronary Syndrome <i>Evidence: History of prior MI, ECG showing Q waves in V1-V4, Cardiac risk factors</i>	3.7%	1 models	Unlikely
Pulmonary Embolism <i>Evidence: Exertional dyspnea, Tachycardia, Acute respiratory symptoms</i>	3.7%	1 models	Unlikely

### Minority Opinions

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

- **Acute Coronary Syndrome** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Unknown

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

Supporting Models: Unknown

### Additional Diagnoses Considered:

# Management Strategies & Clinical Pathways

## Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Oxygen therapy to maintain SpO2 >90%	Clinical indication	50%
2	IV diuresis with furosemide	Clinical indication	50%
3	Cardiac monitoring	Clinical indication	50%
4	Sit patient upright	Clinical indication	50%

## Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
ECG	Diagnostic confirmation	Routine	As indicated
Transthoracic echocardiography	Diagnostic confirmation	Routine	As indicated
BNP/NT-proBNP	Diagnostic confirmation	Routine	As indicated
Troponin	Diagnostic confirmation	Routine	As indicated
Basic metabolic panel	Diagnostic confirmation	Routine	As indicated
Chest X-ray	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	Acute Decompensated Heart Failure due to Ischemic Cardiomyopathy	General
deepseek-r1	China	Unknown	<\$0.01	Acute decompensated heart failure due to ischemic cardiomyopathy	General
gemma-2-9b-it	USA	Free	Free	Not specified	General
llama-3.2-3b-in	USA	Free	Free	Acute Decompensated Heart Failure	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:** Acute Decompensated Heart Failure due to Ischemic Cardiomyopathy (ICD-10: I50.21) - Confidence: 0.95

**Differential Diagnoses:**

- Acute Coronary Syndrome (ICD: I24.9) - 0.4
- Pulmonary Embolism (ICD: I26.99) - 0.3
- Exacerbation of Chronic Obstructive Pulmonary Disease (ICD: J44.1) - 0.25

**Key Clinical Findings:**

- Progressive exertional dyspnea
- Orthopnea
- Paroxysmal nocturnal dyspnea
- Tachycardia

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

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

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

**Primary Diagnosis:** Acute Decompensated Heart Failure (ICD-10: I50.9) - Confidence: 0.95

**Differential Diagnoses:**

- Cardiac Sarcoidosis - 0.4
- Pulmonary Embolism - 0.3
- Heart Valve Disease - 0.6

**Key Clinical Findings:**

- Progressive exertional dyspnea
- Orthopnea
- Paroxysmal nocturnal dyspnea
- Jugular venous distension