

# MEDLEY

## Medical AI Ensemble Clinical Decision Report

Case ID: tmpg62nw0z4

Title: Custom Case Analysis

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### Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Acute decompensated heart failure due to ischemic cardiomyopathy <i>Evidence: High confidence from model assessment, Specific ICD code provided, Clear diagnostic terminology</i>	I50.1	0.0%	Very Low	PRIMARY

### Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Acute coronary syndrome <i>Evidence: Listed as differential diagnosis with moderate confidence</i>	I24.9	3.7%	Minority (<10%)
Pulmonary embolism <i>Evidence: Listed as differential diagnosis with lower confidence</i>	I26.99	3.7%	Minority (<10%)

Analysis Overview
Models Queried: 4
Successful Responses: 4
Consensus Level: High
Total Estimated Cost: <\$0.01

# 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	heart fa	acute co	pulmonar
cardiac symptom	Strong	-	-
respiratory sym	-	-	Medium
chest pain	-	Medium	-

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
- Assess airway, breathing, circulation
- Obtain IV access
- Administer supplemental oxygen if SpO<sub>2</sub> <90%
- Obtain ECG for diagnostic confirmation

## Primary Diagnosis Clinical Summaries

### ■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
ECG findings requiring immediate assessment	Clinical presentation	Key diagnostic indicator
Echocardiographic evaluation needed urgently	Clinical presentation	Key diagnostic indicator
BNP elevation assessment	Clinical presentation	Key diagnostic indicator
Chest X-ray abnormalities	Clinical presentation	Key diagnostic indicator
D-dimer elevation possibility	Clinical presentation	Key diagnostic indicator

### ■ Recommended Tests

Test Name	Type	Priority	Rationale
ECG	Laboratory	Urgent	Diagnostic confirmation
Chest X-ray	Laboratory	Urgent	Diagnostic confirmation
BNP or NT-proBNP	Laboratory	Urgent	Diagnostic confirmation
Complete metabolic panel	Laboratory	Urgent	Diagnostic confirmation
Troponin levels	Laboratory	Urgent	Diagnostic confirmation

### ■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Assess airway, breathing, circulation	Medical	Immediate	Critical intervention
Obtain IV access	Medical	Immediate	Critical intervention
Administer supplemental oxygen if SpO2 <90%	Medical	Immediate	Critical intervention
Position patient upright or semi-Fowler's	Medical	Immediate	Critical intervention
Continuous cardiac monitoring	Medical	Immediate	Critical intervention

## ■ Medications

Medication	Dosage	Route/Frequency	Indication
Furosemide	40-80mg	IV / BID or as needed	Volume overload management
ACE inhibitor or ARB	Low dose initially	PO / Daily	Heart failure management
Beta-blocker	Low dose initially	PO / Daily or BID	Heart failure management

# Diagnostic Landscape Analysis

## Detailed Diagnostic Analysis

The ensemble analysis identified **Acute decompensated heart failure due to ischemic cardiomyopathy** as the primary diagnosis with 0.0% consensus among 1 models.

## Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Acute coronary syndrome <i>Evidence: Listed as differential diagnosis with moderate confidence</i>	3.7%	1 models	Unlikely
Pulmonary embolism <i>Evidence: Listed as differential diagnosis with lower confidence</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: model1
- **Pulmonary embolism** (ICD-10: Unknown) - 3.7% agreement (1 models)  
Supporting Models: model1

## Additional Diagnoses Considered:

# Management Strategies & Clinical Pathways

## Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Assess airway, breathing, circulation	Clinical indication	50%
2	Obtain IV access	Clinical indication	50%
3	Administer supplemental oxygen if SpO2 <90%	Clinical indication	50%
4	Position patient upright or semi-Fowler's	Clinical indication	50%
5	Continuous cardiac monitoring	Clinical indication	50%

## Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
ECG	Diagnostic confirmation	Routine	As indicated
Chest X-ray	Diagnostic confirmation	Routine	As indicated
BNP or NT-proBNP	Diagnostic confirmation	Routine	As indicated
Complete metabolic panel	Diagnostic confirmation	Routine	As indicated
Troponin levels	Diagnostic confirmation	Routine	As indicated
Transthoracic echocardiography	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
gemma-2-9b-it	USA	Free	Free	Not specified	General
llama-3.2-3b-in	USA	Free	Free	Acute Decompensated Ischemic Cardiomyopathy	General
mistral-7b-inst	France	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: I50.1) - Confidence: 0.95

**Differential Diagnoses:**

- Acute coronary syndrome (ICD: I24.9) - 0.4
- Pulmonary embolism (ICD: I26.99) - 0.2
- Chronic kidney disease exacerbation (ICD: N18.9) - 0.15

**Key Clinical Findings:**

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

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

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

**Primary Diagnosis:** Acute Decompensated Ischemic Cardiomyopathy (ICD-10: I36.0) - Confidence: 0.9

**Differential Diagnoses:**

- Acute Coronary Syndrome (ICD: I21.0-I21.9) - 0.8
- Heart Failure (ICD: I50.0-I50.9) - 0.7
- Congestive Cardiac Failure (ICD: I50.0-I50.9) - 0.6

**Key Clinical Findings:**

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

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

**Primary Diagnosis:** Acute Decompensated Heart Failure (ICD-10: I50.9) - Confidence: 0.9

**Differential Diagnoses:**

- Chronic Obstructive Pulmonary Disease (COPD) (ICD: J44.9) - 0.3
- Pulmonary Embolism (ICD: I26.0) - 0.2
- Pneumonia (ICD: J18.9) - 0.2

**Key Clinical Findings:**

- Tachycardia
- Hypertension
- Jugular Venous Distension
- Bibasilar Crackles