MEDLEY

Medical AI Ensemble Clinical Decision Report

Case ID: tmpm64n0cn7 Title: Custom Case Analysis Generated: 2025-09-06 09:25

Primary Diagnostic Consensus

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

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Acute Coronary Syndrome *Evidence: History of prior MI, ECG showing old anterior infarct*	I24.9	7.4%	Minority (<10%)
Pulmonary Embolism *Evidence: Acute dyspnea, Possible right heart strain*	I26.99	7.4%	Minority (<10%)
Pulmonary Hypertension *Evidence: Exertional dyspnea, Right heart failure signs*	I26.9	3.7%	Minority (<10%)
Atrial Fibrillation *Evidence: Possible arrhythmia contributing to decompensation*	I48.9	3.7%	Minority (<10%)
Cardiogenic Shock *Evidence: Severe heart failure with low EF*	I50.9	3.7%	Minority (<10%)
Constrictive Pericarditis *Evidence: Similar presentation to heart failure*	K65.9	3.7%	Minority (<10%)
Ischemic Cardiomyopathy *Evidence: History of coronary artery disease, Echo findings*	I25.5	3.7%	Minority (<10%)
Diastolic Heart Failure *Evidence: Hypertension history, Diabetes comorbidity*	I50.7	3.7%	Minority (<10%)

Diagnosis	ICD-10	Support	Type
Valvular Heart Disease *Evidence: Mitral regurgitation on echo*	I08.9	3.7%	Minority (<10%)
Pneumonia *Evidence: Crackles on auscultation, Possible infectious process*	J18.9	3.7%	Minority (<10%)

Analysis Overview

Models Queried: 6

Successful Responses: 6

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	Pulmonar	Pneumoni
Exertional dysp	Strong	-	Medium	Medium	-
Orthopnea	Strong	-	-	-	-
Jugular venous	Strong	-	-	-	-
Crackles	Strong	-	-	-	Medium
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

• Recurrent fever episodes

Primary Recommendations

• Consider Acute Decompensated Heart Failure due to Ischemic Cardiomyopathy among differential diagnoses

• Obtain ECG to rule out acute ischemia for diagnostic confirmation

Primary Diagnosis Clinical Summaries

■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
Prior anterior MI history	Clinical presentation	Key diagnostic indicator
Exertional dyspnea and orthopnea	Clinical presentation	Key diagnostic indicator
JVD and crackles on exam	Clinical presentation	Key diagnostic indicator
Low EF with anterior wall akinesis	Clinical presentation	Key diagnostic indicator
Elevated BNP	Clinical presentation	Key diagnostic indicator

■ Recommended Tests

Test Name	Type	Priority	Rationale
ECG to rule out acute ischemia	Laboratory	Urgent	Diagnostic confirmation
BNP/NT-proBNP levels	Laboratory	Urgent	Diagnostic confirmation
Chest X-ray	Laboratory	Urgent	Diagnostic confirmation
Echocardiogram	Laboratory	Urgent	Diagnostic confirmation
Basic metabolic panel (electrolytes, renal function)	Laboratory	Urgent	Diagnostic confirmation

■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Oxygen therapy to maintain SpO2 >90%	Medical	Immediate	Critical intervention
IV access and continuous cardiac monitoring	Medical	Immediate	Critical intervention
Sit patient upright to improve breathing	Medical	Immediate	Critical intervention
Initiate diuresis with IV loop diuretic	Medical	Immediate	Critical intervention

■ Medications

Medication	Dosage	Route/Frequency	Indication
Furosemide	40-80 mg IV	IV / Every 6-12 hours as needed	Volume overload in heart failure
Nitroglycerin	10-20 mcg/min IV	IV infusion / Continuous	Afterload reduction in acute heart failure
Morphine sulfate	2-4 mg IV	IV / Every 5-15 minutes as needed	Anxiety and dyspnea relief in severe cases

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 3 models.

Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Acute Coronary Syndrome *Evidence: History of prior MI, ECG showing old anterior infarct*	7.4%	2 models	Unlikely
Pulmonary Embolism *Evidence: Acute dyspnea, Possible right heart strain*	7.4%	2 models	Unlikely
Pulmonary Hypertension *Evidence: Exertional dyspnea, Right heart failure signs*	3.7%	1 models	Unlikely
Atrial Fibrillation *Evidence: Possible arrhythmia contributing to decompensation*	3.7%	1 models	Unlikely
Cardiogenic Shock *Evidence: Severe heart failure with low EF*	3.7%	1 models	Unlikely
Constrictive Pericarditis *Evidence: Similar presentation to heart failure*	3.7%	1 models	Unlikely
Ischemic Cardiomyopathy *Evidence: History of coronary artery disease, Echo findings*	3.7%	1 models	Unlikely
Diastolic Heart Failure *Evidence: Hypertension history, Diabetes comorbidity*	3.7%	1 models	Unlikely

Minority Opinions

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

- **Acute Coronary Syndrome** (ICD-10: Unknown) - 7.4% agreement (2 models)
  Supporting Models: Model1, Model4
- **Pulmonary Embolism** (ICD-10: Unknown) - 7.4% agreement (2 models)
  Supporting Models: Model1, Model3
- **Pulmonary Hypertension** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model3

- **Atrial Fibrillation** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model3
- **Cardiogenic Shock** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model4
- **Constrictive Pericarditis** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model4
- **Ischemic Cardiomyopathy** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model6
- **Diastolic Heart Failure** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model6
- **Valvular Heart Disease** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model6
- **Pneumonia** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model5

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 access and continuous cardiac monitoring	Clinical indication	50%
3	Sit patient upright to improve breathing	Clinical indication	50%
4	Initiate diuresis with IV loop diuretic	Clinical indication	50%

Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
ECG to rule out acute ischemia	Diagnostic confirmation	Routine	As indicated
BNP/NT-proBNP levels	Diagnostic confirmation	Routine	As indicated
Chest X-ray	Diagnostic confirmation	Routine	As indicated
Echocardiogram	Diagnostic confirmation	Routine	As indicated
Basic metabolic panel (electrolytes, renal function)	Diagnostic confirmation	Routine	As indicated
Troponin levels	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-3-12b-it	USA	Unknown	<$0.01	Acute Decompensated Heart Failure secondary to Ischemic Cardiomyopathy	General
llama-3.2-3b-in	USA	Free	Free	Acute Decompensated Ischemic Cardiomyopathy	General
mistral-7b-inst	France	Free	Free	Acute Decompensated Heart Failure in the Background of Ischemic Cardiomyopathy	General
shisa-v2-llama3	Japan/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) - 0.3
- Pulmonary embolism (ICD: I26.99) - 0.2
- Exacerbation of chronic obstructive pulmonary disease (ICD: J44.1) - 0.15

Key Clinical Findings:

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

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

3. gemma-3-12b-it (USA, Released: 2024-12-11)

Primary Diagnosis: Acute Decompensated Heart Failure secondary to Ischemic Cardiomyopathy (ICD-10: I50.9) - Confidence: 0.95

Differential Diagnoses:

- Pulmonary Hypertension (ICD: I26.9) - 0.6
- Arrhythmia (Atrial Fibrillation) (ICD: I48.9) - 0.5
- Chronic Kidney Disease (ICD: N18.9) - 0.7

Key Clinical Findings:

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

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

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

Primary Diagnosis: Acute Decompensated Heart Failure in the Background of Ischemic Cardiomyopathy (ICD-10: I50.90) - Confidence: 1.0

Differential Diagnoses:

- Acute Coronary Syndrome (ICD: I21.9) - 0.7
- Pulmonary Edema due to Non-Cardiac Cause (ICD: J80.00) - 0.6
- Chronic Kidney Disease (ICD: N18.xx) - 0.6

Key Clinical Findings:

- Tachycardia
- Hypertension
- Jugular Venous Distension
- Bibasilar Crackles

6. shisa-v2-llama3 (Japan/USA, Released: 2024-12-20)

Primary Diagnosis: Acute Decompensated Heart Failure (ICD-10: I50.21) - Confidence: 0.95

Differential Diagnoses:

- Ischemic Cardiomyopathy (ICD: I25.5) - 0.9
- Diastolic Heart Failure (ICD: I50.7) - 0.6
- Valvular Heart Disease (Mitral Regurgitation) (ICD: I34.0) - 0.7

Key Clinical Findings:

- Progressive exertional dyspnea
- Orthopnea and paroxysmal nocturnal dyspnea
- Tachycardia and hypertension
- Jugular venous distension