MEDLEY

Medical AI Ensemble Clinical Decision Report

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Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Acute Decompensated Heart Failure due to Ischemic Cardiomyopathy *Evidence: Prior anterior MI history, Low EF of 25% with anterior wall akinesis, Progressive exertional dyspnea, orthopnea, PND, JVD, crackles, S3 gallop on exam*	I50.23	0.0%	Very Low	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Acute Coronary Syndrome *Evidence: History of prior MI, ECG abnormalities*	I24.9	3.7%	Minority (<10%)
Pulmonary Embolism *Evidence: Acute dyspnea presentation*	I26.99	3.7%	Minority (<10%)
Chronic Obstructive Pulmonary Disease *Evidence: Exertional dyspnea*	J44.9	0.0%	Minority (<10%)
Pneumonia *Evidence: Crackles on auscultation*	J18.9	0.0%	Minority (<10%)
Cardiac Arrhythmia *Evidence: Low EF and cardiac history*	I49.9	0.0%	Minority (<10%)
Renal Failure *Evidence: Poorly controlled diabetes*	N19	0.0%	Minority (<10%)
Hypertensive Crisis *Evidence: History of hypertension*	I16.9	0.0%	Minority (<10%)
Diabetic Ketoacidosis *Evidence: Poorly controlled diabetes*	E10.10	0.0%	Minority (<10%)
Pericardial Effusion *Evidence: Low EF and cardiac symptoms*	I31.3	0.0%	Minority (<10%)
Valvular Heart Disease *Evidence: Cardiac gallop and murmurs*	I38	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	Acute De	Acute Co	Pulmonar	COPD	Pneumoni
Exertional dysp	Strong	-	-	Medium	-
Orthopnea	Strong	-	-	-	-
Paroxysmal noct	Strong	-	-	-	-
JVD	Strong	-	-	-	-
Crackles	Strong	-	-	-	Medium
S3 gallop	Strong	-	-	-	-
ECG Q waves	-	Strong	-	-	-
Low EF	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 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 of 25%	Clinical presentation	Key diagnostic indicator
Anterior wall akinesis	Clinical presentation	Key diagnostic indicator
ECG Q waves V1-V4	Clinical presentation	Key diagnostic indicator
JVD and crackles	Clinical presentation	Key diagnostic indicator

■ Recommended Tests

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

■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Assess airway, breathing, circulation	Medical	Immediate	Critical intervention
Administer supplemental oxygen	Medical	Immediate	Critical intervention
Obtain IV access	Medical	Immediate	Critical intervention
Initiate cardiac monitoring	Medical	Immediate	Critical intervention
Position patient upright if tolerated	Medical	Immediate	Critical intervention

■ Medications

Medication	Dosage	Route/Frequency	Indication
Furosemide	20-40 mg	IV / Once, then titrate based on response	Diuresis for volume overload
Nitroglycerin	10-20 mcg/min	IV / Continuous infusion	Afterload reduction in hypertensive heart failure

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 *Evidence: History of prior MI, ECG abnormalities*	3.7%	1 models	Unlikely
Pulmonary Embolism *Evidence: Acute dyspnea presentation*	3.7%	1 models	Unlikely
Chronic Obstructive Pulmonary Disease *Evidence: Exertional dyspnea*	0.0%	0 models	Unlikely
Pneumonia *Evidence: Crackles on auscultation*	0.0%	0 models	Unlikely
Cardiac Arrhythmia *Evidence: Low EF and cardiac history*	0.0%	0 models	Unlikely
Renal Failure *Evidence: Poorly controlled diabetes*	0.0%	0 models	Unlikely
Hypertensive Crisis *Evidence: History of hypertension*	0.0%	0 models	Unlikely
Diabetic Ketoacidosis *Evidence: Poorly controlled diabetes*	0.0%	0 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
- **Chronic Obstructive Pulmonary Disease** (ICD-10: Unknown) - 0.0% agreement (0 models)
  Supporting Models:
- **Pneumonia** (ICD-10: Unknown) - 0.0% agreement (0 models)
  Supporting Models:
- **Cardiac Arrhythmia** (ICD-10: Unknown) - 0.0% agreement (0 models)
  Supporting Models:
- **Renal Failure** (ICD-10: Unknown) - 0.0% agreement (0 models)

Supporting Models:

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

  Supporting Models:

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

  Supporting Models:

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

  Supporting Models:

- **Valvular Heart Disease** (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	Assess airway, breathing, circulation	Clinical indication	50%
2	Administer supplemental oxygen	Clinical indication	50%
3	Obtain IV access	Clinical indication	50%
4	Initiate cardiac monitoring	Clinical indication	50%
5	Position patient upright if tolerated	Clinical indication	50%

Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
ECG	Diagnostic confirmation	Routine	As indicated
BNP/NT-proBNP	Diagnostic confirmation	Routine	As indicated
Troponin	Diagnostic confirmation	Routine	As indicated
Chest X-ray	Diagnostic confirmation	Routine	As indicated
Basic metabolic panel	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
deepseek-r1	China	Unknown	<$0.01	Acute decompensated heart failure due to ischemic cardiomyopathy	General
llama-3.2-3b-in	USA	Free	Free	Acute Decompensated Ischemic Cardiomyopathy	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: I50.23) - Confidence: 0.95

Differential Diagnoses:

- Acute Coronary Syndrome (ICD: I24.9) - 0.4
- Pulmonary Embolism (ICD: I26.99) - 0.2
- Exacerbation of Chronic Obstructive Pulmonary Disease (ICD: J44.1) - 0.15

Key Clinical Findings:

- 68-year-old male with hypertension, diabetes, prior MI
- Progressive exertional dyspnea, orthopnea, PND
- Tachycardia, hypertension, JVD, bibasilar crackles, S3 gallop
- ECG: sinus tachycardia with Q waves V1-V4

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

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) - 0.8
- Heart Failure with Reduced Ejection Fraction (ICD: I50.0) - 0.7
- Cardiogenic Shock (ICD: I99.0) - 0.6

Key Clinical Findings:

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