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: LVEF 25% with anterior wall akinesis, History of anterior MI, Exertional dyspnea, orthopnea, PND, S3 gallop*	I50.23	0.0%	Very Low	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Acute coronary syndrome *Evidence: History of anterior MI, Q waves in V1-V4, Chest symptoms*	I24.9	3.7%	Minority (<10%)
Pulmonary embolism *Evidence: Dyspnea, Tachycardia*	I26.99	3.7%	Minority (<10%)

Analysis Overview
Models Queried: 2
Successful Responses: 2
Consensus Level: High
Total 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	acute de	acute co	pulmonar
exertional dysp	Strong	-	-
orthopnea	Strong	-	-
PND	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 Serial BNP or NT-proBNP levels for diagnostic confirmation

Primary Diagnosis Clinical Summaries

■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
LVEF 25% with anterior wall akinesis	Clinical presentation	Key diagnostic indicator
History of anterior MI	Clinical presentation	Key diagnostic indicator
Exertional dyspnea, orthopnea, PND	Clinical presentation	Key diagnostic indicator
S3 gallop on cardiac exam	Clinical presentation	Key diagnostic indicator
Elevated BNP levels	Clinical presentation	Key diagnostic indicator

■ Recommended Tests

Test Name	Type	Priority	Rationale
Serial BNP or NT-proBNP levels	Laboratory	Urgent	Diagnostic confirmation
Complete metabolic panel including creatinine and electrolytes	Laboratory	Urgent	Diagnostic confirmation
Arterial blood gas if respiratory distress	Laboratory	Urgent	Diagnostic confirmation
Chest X-ray to assess pulmonary edema	Laboratory	Urgent	Diagnostic confirmation
Repeat echocardiogram if clinical deterioration	Laboratory	Urgent	Diagnostic confirmation

■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Oxygen therapy to maintain SpO2 >90%	Medical	Immediate	Critical intervention
IV access and fluid restriction to <2L/day	Medical	Immediate	Critical intervention
Daily weights and strict I/O monitoring	Medical	Immediate	Critical intervention

Intervention	Category	Urgency	Clinical Reasoning
Continuous cardiac monitoring	Medical	Immediate	Critical intervention
Position patient upright to reduce preload	Medical	Immediate	Critical intervention

■ Medications

Medication	Dosage	Route/Frequency	Indication
Furosemide	40-80mg	IV / BID	Diuresis for volume overload
Lisinopril	2.5-5mg	PO / Daily	ACE inhibitor for heart failure
Metoprolol succinate	25mg	PO / BID	Beta-blocker for heart failure
Atorvastatin	40mg	PO / Daily	Statin for ischemic cardiomyopathy

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 2 models.

Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Acute coronary syndrome *Evidence: History of anterior MI, Q waves in V1-V4, Chest symptoms*	3.7%	1 models	Unlikely
Pulmonary embolism *Evidence: Dyspnea, Tachycardia*	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	Oxygen therapy to maintain SpO2 >90%	Clinical indication	50%
2	IV access and fluid restriction to <2L/day	Clinical indication	50%
3	Daily weights and strict I/O monitoring	Clinical indication	50%
4	Continuous cardiac monitoring	Clinical indication	50%
5	Position patient upright to reduce preload	Clinical indication	50%

Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
Serial BNP or NT-proBNP levels	Diagnostic confirmation	Routine	As indicated
Complete metabolic panel including creatinine and electrolytes	Diagnostic confirmation	Routine	As indicated
Arterial blood gas if respiratory distress	Diagnostic confirmation	Routine	As indicated
Chest X-ray to assess pulmonary edema	Diagnostic confirmation	Routine	As indicated
Repeat echocardiogram if clinical deterioration	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

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) - 0.3
- Pulmonary embolism (ICD: I26.99) - 0.2
- Chronic kidney disease with volume overload (ICD: N18.9) - 0.25

Key Clinical Findings:

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

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