

MEDLEY

Medical AI Ensemble Clinical Decision Report

Case ID: tmpa2f37_bp

Title: Custom Case Analysis

Generated: 2025-09-05
20:31

Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Acute Decompensated Heart Failure <i>Evidence: Exertional dyspnea, Orthopnea and PND, JVD on examination, S3 gallop</i>	I50.21	0.0%	Very Low	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Ischemic Cardiomyopathy <i>Evidence: Prior anterior MI, Q waves in V1-V4, Anterior wall akinesis on echo</i>	I25.5	7.4%	Minority (<10%)
Acute Coronary Syndrome <i>Evidence: History of MI, Cardiac risk factors</i>	I24.9	3.7%	Minority (<10%)
Pulmonary Embolism <i>Evidence: Dyspnea, Acute presentation</i>	I26.99	3.7%	Minority (<10%)
Pulmonary Hypertension <i>Evidence: Heart failure symptoms, Dyspnea</i>	I26.9	3.7%	Minority (<10%)
Atrial Fibrillation <i>Evidence: Heart failure, Irregular rhythm potential</i>	I48.9	3.7%	Minority (<10%)
Diabetic Cardiomyopathy <i>Evidence: Poorly controlled diabetes, Heart failure symptoms</i>	I43.8	3.7%	Minority (<10%)
Hypertensive Heart Disease <i>Evidence: History of hypertension, Heart failure</i>	I13.0	3.7%	Minority (<10%)

Analysis Overview

Models Queried: 7
Successful Responses: 7
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	Ischemic	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 among differential diagnoses
- Assess airway, breathing, circulation
- Obtain IV access
- Place patient on continuous cardiac monitoring
- Obtain ECG for diagnostic confirmation

Primary Diagnosis Clinical Summaries

■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
Exertional dyspnea	Clinical presentation	Key diagnostic indicator
Orthopnea	Clinical presentation	Key diagnostic indicator
Paroxysmal nocturnal dyspnea	Clinical presentation	Key diagnostic indicator
Jugular venous distension	Clinical presentation	Key diagnostic indicator
S3 gallop	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 including creatinine and electrolytes	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
Place patient on continuous cardiac monitoring	Medical	Immediate	Critical intervention
Position patient upright to reduce preload	Medical	Immediate	Critical intervention
Administer supplemental oxygen if SpO2 < 90%	Medical	Immediate	Critical intervention

■ Medications

Medication	Dosage	Route/Frequency	Indication
Furosemide	40-80 mg	IV / BID or as needed	Diuresis for volume overload
ACE inhibitor or ARB	Low dose initially	PO / Daily	Heart failure with reduced ejection fraction
Beta-blocker	Low dose initially	PO / Daily or BID	Heart failure with reduced ejection fraction

Diagnostic Landscape Analysis

Detailed Diagnostic Analysis

The ensemble analysis identified **Acute Decompensated Heart Failure** as the primary diagnosis with 0.0% consensus among 3 models.

Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Ischemic Cardiomyopathy <i>Evidence: Prior anterior MI, Q waves in V1-V4, Anterior wall akinesis on echo</i>	7.4%	2 models	Unlikely
Acute Coronary Syndrome <i>Evidence: History of MI, Cardiac risk factors</i>	3.7%	1 models	Unlikely
Pulmonary Embolism <i>Evidence: Dyspnea, Acute presentation</i>	3.7%	1 models	Unlikely
Pulmonary Hypertension <i>Evidence: Heart failure symptoms, Dyspnea</i>	3.7%	1 models	Unlikely
Atrial Fibrillation <i>Evidence: Heart failure, Irregular rhythm potential</i>	3.7%	1 models	Unlikely
Diabetic Cardiomyopathy <i>Evidence: Poorly controlled diabetes, Heart failure symptoms</i>	3.7%	1 models	Unlikely
Hypertensive Heart Disease <i>Evidence: History of hypertension, Heart failure</i>	3.7%	1 models	Unlikely

Minority Opinions

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

- **Ischemic Cardiomyopathy** (ICD-10: Unknown) - 7.4% agreement (2 models)
Supporting Models: Model1, Model7
- **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
- **Pulmonary Hypertension** (ICD-10: Unknown) - 3.7% agreement (1 models)
Supporting Models: Model4
- **Atrial Fibrillation** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model4

- **Diabetic Cardiomyopathy** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model7

- **Hypertensive Heart Disease** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model7

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	Place patient on continuous cardiac monitoring	Clinical indication	50%
4	Position patient upright to reduce preload	Clinical indication	50%
5	Administer supplemental oxygen if SpO2 < 90%	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 including creatinine and electrolytes	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
deepseek-r1	China	Unknown	<\$0.01	Acute decompensated heart failure on a background of ischemic cardiomyopathy	General
gemma-2-9b-it	USA	Free	Free	Not specified	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	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: I50.23) - Confidence: 0.95

Differential Diagnoses:

- Acute coronary syndrome (ICD: I24.9) - 0.4
- Pulmonary embolism (ICD: I26.99) - 0.2
- Chronic obstructive pulmonary disease exacerbation (ICD: J44.1) - 0.15

Key Clinical Findings:

- Progressive exertional dyspnea, orthopnea, PND
- Tachycardia, hypertension, JVD, bibasilar crackles, S3 gallop
- ECG: sinus tachycardia with Q waves V1-V4
- Echo: LVEF 25% with anterior wall akinesis, moderate mitral regurgitation

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

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

4. 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

5. 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:

- Chronic Cor Pulmonale (ICD: I51.0) - 0.4
- Acute Coronary Syndrome (ICD: I21.0) - 0.7
- Atrial Fibrillation (ICD: I48.0) - 0.3

Key Clinical Findings:

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

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

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

Differential Diagnoses:

- Sepsis (ICD: A41.9) - 0.3
- Chronic Kidney Disease (ICD: N18.xx) - 0.4
- Pulmonary Embolism (ICD: I26.0) - 0.2

Key Clinical Findings:

- Tachycardia
- Hypertension
- Jugular Venous Distension
- Bibasilar Crackles

7. 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) - 0.85
- Diabetic Cardiomyopathy (ICD: I43.8) - 0.6
- Hypertensive Heart Disease (ICD: I13.0) - 0.7

Key Clinical Findings:

- Progressive exertional dyspnea
- Orthopnea and paroxysmal nocturnal dyspnea
- Jugular venous distension
- Bibasilar crackles