MEDLEY

Medical AI Ensemble Clinical Decision Report

Case ID: tmp8v_ellu5 Title: Custom Case Analysis Generated: 2025-09-07 16:14

Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Acute Decompensated Heart Failure *Evidence: Progressive exertional dyspnea, Orthopnea, Paroxysmal nocturnal dyspnea, JVD*	I50.23	0.0%	Very Low	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Acute Coronary Syndrome *Evidence: History of previous anterior MI, ECG showing Q waves in V1-V4*	I24.9	7.4%	Minority (<10%)
Pulmonary Embolism *Evidence: Acute dyspnea presentation, Possible right heart strain*	I26.99	7.4%	Minority (<10%)
Ischemic Cardiomyopathy *Evidence: History of anterior MI, Low ejection fraction, Q waves on ECG*	I25.1	3.7%	Minority (<10%)
Pulmonary Hypertension *Evidence: Right heart failure signs, JVD, Possible secondary to heart failure*	I50.11	3.7%	Minority (<10%)
Atrial Fibrillation *Evidence: Possible arrhythmia contributing to heart failure, Common comorbidity in heart failure*	I48.0	3.7%	Minority (<10%)
Cardiogenic Shock *Evidence: Severely reduced ejection fraction, Signs of poor perfusion*	R57.0	3.7%	Minority (<10%)
Chronic Kidney Disease *Evidence: Poorly controlled diabetes, Need for kidney function tests*	N18.9	3.7%	Minority (<10%)
COPD Exacerbation *Evidence: Dyspnea symptoms, Crackles on exam*	J44.1	3.7%	Minority (<10%)

Diagnosis	ICD-10	Support	Type
Pneumonia *Evidence: Crackles on lung exam, Fever possibility, Dyspnea*	J18.9	3.7%	Minority (<10%)
Hypertensive Emergency *Evidence: History of hypertension, Acute decompensation*	I16.0	3.7%	Minority (<10%)
Diabetic Ketoacidosis *Evidence: Poorly controlled diabetes, Metabolic derangement possible*	E10.10	3.7%	Minority (<10%)
Volume Overload *Evidence: JVD, Crackles, Orthopnea*	E87.70	3.7%	Minority (<10%)

Analysis Overview

Models Queried: 7

Successful Responses: 7

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	Ischemic	Pulmonar	Cardioge	COPD Exa	Pneumoni
Dyspnea	Strong	-	Medium	-	-	-	-	-
Orthopnea	Strong	-	-	-	-	-	-	-
PND	-	-	-	-	-	-	-	-
JVD	Strong	-	-	-	-	-	-	-
Crackles	-	-	-	-	-	-	-	Weak
S3 gallop	-	-	-	-	-	-	-	-
Low EF	Strong	-	-	-	-	-	-	-
ECG abnormaliti	-	Medium	-	-	-	-	-	-
Hypertension	-	-	-	-	-	-	-	-
Diabetes	-	-	-	-	-	-	-	-

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
• Obtain ECG for diagnostic confirmation

Primary Diagnosis Clinical Summaries

■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
Progressive 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
Bilateral crackles	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/NT-proBNP	Laboratory	Urgent	Diagnostic confirmation
Transthoracic echocardiography	Laboratory	Urgent	Diagnostic confirmation
Blood gas analysis	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
Elevate head of bed	Medical	Immediate	Critical intervention

■ Medications

Medication	Dosage	Route/Frequency	Indication
Furosemide	20-40 mg	IV / Once, then reassess	Diuresis for fluid overload
Nitroglycerin	10-20 mcg/min	IV infusion / Continuous	Preload reduction in hypertensive heart failure

Diagnostic Landscape Analysis

Detailed Diagnostic Analysis

The ensemble analysis identified **Acute Decompensated Heart Failure** 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 previous anterior MI, ECG showing Q waves in V1-V4*	7.4%	2 models	Unlikely
Pulmonary Embolism *Evidence: Acute dyspnea presentation, Possible right heart strain*	7.4%	2 models	Unlikely
Ischemic Cardiomyopathy *Evidence: History of anterior MI, Low ejection fraction, Q waves on ECG*	3.7%	1 models	Unlikely
Pulmonary Hypertension *Evidence: Right heart failure signs, JVD, Possible secondary to heart failure*	3.7%	1 models	Unlikely
Atrial Fibrillation *Evidence: Possible arrhythmia contributing to heart failure, Common comorbidity in heart failure*	3.7%	1 models	Unlikely
Cardiogenic Shock *Evidence: Severely reduced ejection fraction, Signs of poor perfusion*	3.7%	1 models	Unlikely
Chronic Kidney Disease *Evidence: Poorly controlled diabetes, Need for kidney function tests*	3.7%	1 models	Unlikely
COPD Exacerbation *Evidence: Dyspnea symptoms, Crackles on exam*	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, Model7
- **Pulmonary Embolism** (ICD-10: Unknown) - 7.4% agreement (2 models)
  Supporting Models: Model1, Model7
- **Ischemic Cardiomyopathy** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model4

- **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
- **Cardiogenic Shock** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model7
- **Chronic Kidney Disease** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model6
- **COPD Exacerbation** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model5
- **Pneumonia** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model5
- **Hypertensive Emergency** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model2
- **Diabetic Ketoacidosis** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model6
- **Volume Overload** (ICD-10: Unknown) - 3.7% agreement (1 models)
  Supporting Models: Model2

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	Elevate head of bed	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/NT-proBNP	Diagnostic confirmation	Routine	As indicated
Transthoracic echocardiography	Diagnostic confirmation	Routine	As indicated
Blood gas analysis	Diagnostic confirmation	Routine	As indicated
Basic metabolic panel	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 (ADHF) secondary to 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	General
llama-3.2-3b-in	USA	Free	Free	Acute Decompensated Ischemic Cardiomyopathy	General
mistral-7b-inst	France	Free	Free	Acute Decompensated Heart Failure on a background of Ischemic Cardiomyopathy	General
shisa-v2-llama3	Japan/USA	Free	Free	Acute decompensated heart failure with reduced ejection fraction (HFrEF)	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) - 0.3
- Exacerbation of chronic obstructive pulmonary disease (ICD: J44.1) - 0.25

Key Clinical Findings:

- Progressive exertional dyspnea, orthopnea, PND
- Tachycardia, hypertension, JVD, bibasilar crackles, S3 gallop
- ECG with sinus tachycardia and anterior Q waves
- Echo showing LVEF 25% with anterior wall akinesis and 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 (ICD-10: I50.9) - Confidence: 0.95

Differential Diagnoses:

- Ischemic Cardiomyopathy (ICD: I25.1) - 0.85
- Pulmonary Hypertension (ICD: I50.11) - 0.6
- Atrial Fibrillation (ICD: I48.91) - 0.5

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-I36.9) - Confidence: 0.9

Differential Diagnoses:

- Acute Coronary Syndrome (ICD: I21.0-I21.9) - 0.8
- Heart Failure with Preserved Ejection Fraction (ICD: I50.0-I50.9) - 0.7
- Constrictive Pericarditis (ICD: I87.0-I87.9) - 0.6

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 on a background of Ischemic Cardiomyopathy (ICD-10: I50.93) - Confidence: 1.0

Differential Diagnoses:

- Pulmonary edema (ICD: I27.0) - 0.9
- Chronic obstructive pulmonary disease exacerbation (ICD: J44.0) - 0.8
- Chronic kidney disease (ICD: N18.xx) - 0.7

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 with reduced ejection fraction (HFrEF) (ICD-10: I50.23) - Confidence: 0.95

Differential Diagnoses:

- Cardiogenic shock (ICD: R57.0) - 0.6
- Pulmonary embolism (ICD: I26.09) - 0.4
- Acute coronary syndrome (ICD: I24.9) - 0.5

Key Clinical Findings:

- Progressive dyspnea
- Orthopnea
- Paroxysmal nocturnal dyspnea

- Tachycardia