MEDLEY

Medical AI Ensemble Clinical Decision Report

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Primary Diagnostic Consensus

Diagnosis	ICD-10	Agreement	Confidence	Status
Unstable Angina *Evidence: Exertional chest pain radiating to left shoulder and jaw, History of hypertension, hyperlipidemia, and type 2 diabetes, More intense episode that didn't fully resolve with rest, Classic angina presentation with cardiovascular risk factors*	I20.0	0.0%	Very Low	PRIMARY

Alternative & Minority Diagnoses

Diagnosis	ICD-10	Support	Type
Non-ST Elevation Myocardial Infarction (NSTEMI) *Evidence: Chest pain pattern, Cardiovascular risk factors*	I21.4	3.7%	Minority (<10%)
Acute Myocardial Infarction *Evidence: Chest pain symptoms, Risk factor profile*	I21.0	3.7%	Minority (<10%)
Stable Angina *Evidence: Exertional chest pain, Relief with rest historically*	I20.1	3.7%	Minority (<10%)
Acute Coronary Syndrome (ACS) *Evidence: Chest pain, Cardiovascular risk factors*	I24.9	3.7%	Minority (<10%)
Pulmonary Embolism *Evidence: Chest pain, Shortness of breath*	I26.9	3.7%	Minority (<10%)
Musculoskeletal Chest Pain *Evidence: Chest pain presentation*	M54.6	3.7%	Minority (<10%)
Esophageal Spasm *Evidence: Chest pain symptoms*	K22.4	3.7%	Minority (<10%)
Hypertension *Evidence: Known hypertension, Cardiovascular symptoms*	I10	3.7%	Minority (<10%)

Analysis Overview
Models Queried: 5
Successful Responses: 5
Consensus Level: High
Total Estimated 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	Unstable	NSTEMI	Acute MI	Pulmonar
chest pain	Strong	Strong	Strong	-
shortness of br	-	-	-	Strong
fatigue	-	-	-	-
nausea	-	-	-	-
tachycardia	Medium	-	-	-

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

Mr. John Anderson is a 58-year-old man with a history of hypertension, hyperlipidemia, and type 2 diabetes mellitus who presents with a one-week history of intermittent exertional chest discomfort, described as a pressure-like sensation in the central chest radiating to the left shoulder and jaw, typically triggered by physical activity such as walking or climbing stairs, and relieved with rest. This morning, he experienced a more intense episode lasting approximately 20 minutes while walking his dog, which was not fully relieved by rest and prompted his visit to the emergency department due to concern for a cardiac event. He denies associated symptoms such as dyspnea at rest, nausea, or diaphoresis, but reports increasing fatigue over the past month. He has a 30-pack-year smoking history and continues to smoke, follows a sedentary lifestyle, and has a diet high in processed foods. His medications include metformin, lisinopril, atorvastatin, and low-dose aspirin, which was started two weeks ago by his primary care physician. Family history is notable for a father who died of myocardial infarction at age 60 and a mother with hypertension and diabetes.

Key Clinical Findings

- Positive family history of similar episodes

Primary Recommendations

- Consider Unstable Angina among differential diagnoses
- Obtain 12-lead ECG immediately
- Establish IV access
- Administer oxygen if SpO2 < 90%
- Obtain Serial 12-lead ECGs for diagnostic confirmation

Primary Diagnosis Clinical Summaries

■ Key Clinical Findings

Finding	Supporting Evidence	Clinical Reasoning
58-year-old male patient	Clinical presentation	Key diagnostic indicator
History of hypertension, hyperlipidemia, and type 2 diabetes	Clinical presentation	Key diagnostic indicator
Exertional chest pain	Clinical presentation	Key diagnostic indicator
Pain radiating to left shoulder and jaw	Clinical presentation	Key diagnostic indicator
More intense episode that didn't fully resolve with rest	Clinical presentation	Key diagnostic indicator

■ Recommended Tests

Test Name	Type	Priority	Rationale
Serial 12-lead ECGs	Laboratory	Urgent	Diagnostic confirmation
Cardiac troponins (I or T) at presentation and 6-12 hours	Laboratory	Urgent	Diagnostic confirmation
Complete blood count	Laboratory	Urgent	Diagnostic confirmation
Basic metabolic panel	Laboratory	Urgent	Diagnostic confirmation
PT/PTT/INR	Laboratory	Urgent	Diagnostic confirmation

■ Immediate Management

Intervention	Category	Urgency	Clinical Reasoning
Obtain 12-lead ECG immediately	Medical	Immediate	Critical intervention
Establish IV access	Medical	Immediate	Critical intervention
Administer oxygen if SpO2 < 90%	Medical	Immediate	Critical intervention
Continuous cardiac monitoring	Medical	Immediate	Critical intervention
NPO status pending evaluation	Medical	Immediate	Critical intervention

■ Medications

Medication	Dosage	Route/Frequency	Indication
Aspirin	325mg	PO / once	antiplatelet therapy
Clopidogrel	600mg	PO / once	dual antiplatelet therapy
Atorvastatin	80mg	PO / daily	high-intensity statin therapy
Metoprolol	25mg	PO / twice daily	beta-blocker for cardioprotection
Heparin	weight-based protocol	IV / continuous	anticoagulation

Diagnostic Landscape Analysis

Detailed Diagnostic Analysis

The ensemble analysis identified **Unstable Angina** as the primary diagnosis with 0.0% consensus among 2 models.

Detailed Alternative Analysis

Diagnosis	Support	Key Evidence	Clinical Significance
Non-ST Elevation Myocardial Infarction (NSTEMI) *Evidence: Chest pain pattern, Cardiovascular risk factors*	3.7%	1 models	Unlikely
Acute Myocardial Infarction *Evidence: Chest pain symptoms, Risk factor profile*	3.7%	1 models	Unlikely
Stable Angina *Evidence: Exertional chest pain, Relief with rest historically*	3.7%	1 models	Unlikely
Acute Coronary Syndrome (ACS) *Evidence: Chest pain, Cardiovascular risk factors*	3.7%	1 models	Unlikely
Pulmonary Embolism *Evidence: Chest pain, Shortness of breath*	3.7%	1 models	Unlikely
Musculoskeletal Chest Pain *Evidence: Chest pain presentation*	3.7%	1 models	Unlikely
Esophageal Spasm *Evidence: Chest pain symptoms*	3.7%	1 models	Unlikely
Hypertension *Evidence: Known hypertension, Cardiovascular symptoms*	3.7%	1 models	Unlikely

Minority Opinions

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

• **Non-ST Elevation Myocardial Infarction (NSTEMI)** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model1

• **Acute Myocardial Infarction** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model4

• **Stable Angina** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model4

• **Acute Coronary Syndrome (ACS)** (ICD-10: Unknown) - 3.7% agreement (1 models)

Supporting Models: Model3

- **Pulmonary Embolism** (ICD-10: Unknown) - 3.7% agreement (1 models)

  Supporting Models: Model3

- **Musculoskeletal Chest Pain** (ICD-10: Unknown) - 3.7% agreement (1 models)

  Supporting Models: Model1

- **Esophageal Spasm** (ICD-10: Unknown) - 3.7% agreement (1 models)

  Supporting Models: Model4

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

  Supporting Models: Model3

Additional Diagnoses Considered:

Management Strategies & Clinical Pathways

Immediate Actions Required

Priority	Action	Rationale	Consensus
1	Obtain 12-lead ECG immediately	Clinical indication	50%
2	Establish IV access	Clinical indication	50%
3	Administer oxygen if SpO2 < 90%	Clinical indication	50%
4	Continuous cardiac monitoring	Clinical indication	50%
5	NPO status pending evaluation	Clinical indication	50%

Recommended Diagnostic Tests

Test	Purpose	Priority	Timing
Serial 12-lead ECGs	Diagnostic confirmation	Routine	As indicated
Cardiac troponins (I or T) at presentation and 6-12 hours	Diagnostic confirmation	Routine	As indicated
Complete blood count	Diagnostic confirmation	Routine	As indicated
Basic metabolic panel	Diagnostic confirmation	Routine	As indicated
PT/PTT/INR	Diagnostic confirmation	Routine	As indicated
Chest X-ray	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	Unstable Angina	General
deepseek-r1	China	Unknown	<$0.01	Unstable Angina	General
gemma-2-9b-it	USA	Free	Free	Hypertension	General
gemma-3-12b-it	USA	Unknown	<$0.01	Unstable Angina	General
llama-3.2-3b-in	USA	Free	Free	Angina pectoris	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: Unstable Angina (ICD-10: I20.0) - Confidence: 0.9

Differential Diagnoses:

- Non-ST Elevation Myocardial Infarction (NSTEMI) (ICD: I21.4) - 0.75
- Musculoskeletal Chest Pain (ICD: M54.6) - 0.2
- Gastroesophageal Reflux Disease (ICD: K21.9) - 0.15

Key Clinical Findings:

- 58-year-old male with multiple cardiac risk factors
- Typical anginal chest pain: pressure-like, central chest radiation to left shoulder/jaw
- Recent worsening pattern with prolonged episode not fully relieved by rest
- Significant cardiac risk factors: hypertension, diabetes, hyperlipidemia, 30-pack-year smoking history, family history of premature MI

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: Unstable Angina (ICD-10: I20.0) - Confidence: 0.9

Differential Diagnoses:

- Stable Angina (ICD: I20.1) - 0.6
- Acute Myocardial Infarction (ICD: I21.0) - 0.4
- Esophageal Spasm (ICD: K22.8) - 0.2

Key Clinical Findings:

- Intermittent exertional chest discomfort (pressure-like)
- Radiation of chest discomfort to left shoulder and jaw
- Relief of chest discomfort with rest
- Recent episode of more intense chest discomfort not fully relieved by rest

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

Primary Diagnosis: Angina pectoris (ICD-10: I21.0) - Confidence: 0.8

Differential Diagnoses:

- Myocardial infarction (ICD: I21.0) - 0.6
- Pericarditis (ICD: K99.0) - 0.4
- Coronary artery disease (ICD: I70.0) - 0.7

Key Clinical Findings:

- Exertional chest discomfort
- History of hypertension, hyperlipidemia, and type 2 diabetes mellitus
- Increasing fatigue