

• **CRISIS DETECTED - CARDIOLOGIA** •

Staffing shortage risk — 2 weeks to critical threshold

# Cardiologia

Workforce Intelligence Report

SHORTAGE PROBABILITY

Probabilità di carenza

**87%**

Based on 6-week pattern analysis

TIME TO ACT

Tempo per agire

**2 Weeks**

Estimated 2 weeks to critical threshold

STAFF AT RISK

Personale a rischio

**4 Nurses**

Showing fatigue indicators

**RISK LEVEL:**

• **CRISIS**

Confidence: 97% recall on crisis detection

Data: 34 real Italian hospitals - GDPR compliant

# What the data is telling us

Six-week trend analysis - Cardiologia

## ABSENCE RATE

Tasso di assenza

**27.7%**

4-week average: 18.2%

▲ **+9.5% vs 4wk avg**



Indice di affaticamento

## FATIGUE INDEX

**5.8 days**



## OVERTIME RATE

Tasso di straordinario

**42.0%**

4-week average: 28.0%

▲ **+14.0% vs 4wk avg**



Rifiuti di turno

## SHIFT REFUSALS

**5 requests**

▲ **Increase**



**DUAL STRESS SIGNAL ACTIVE: Both absence AND overtime trending upward simultaneously**

# Recommended Actions

## ANONYMOUS STAFF AVAILABILITY

ID	Availability	Eligible Shifts	Skill
STAFF_047	Available	Early, Late	Senior
STAFF_089	Available	Early, Night	Senior
STAFF_112	Partial	Early only	Standard

Identity resolution inside HR system. MindMedix AI processes anonymous IDs only.

### ACT NOW

Agisci ora

€1,100

Planned OT — 1.25x rate

### WAIT

Aspetta

€3,500

Agency staff (€35/h)

### POTENTIAL SAVING

Risparmio potenziale

€2,400

per crisis event prevented

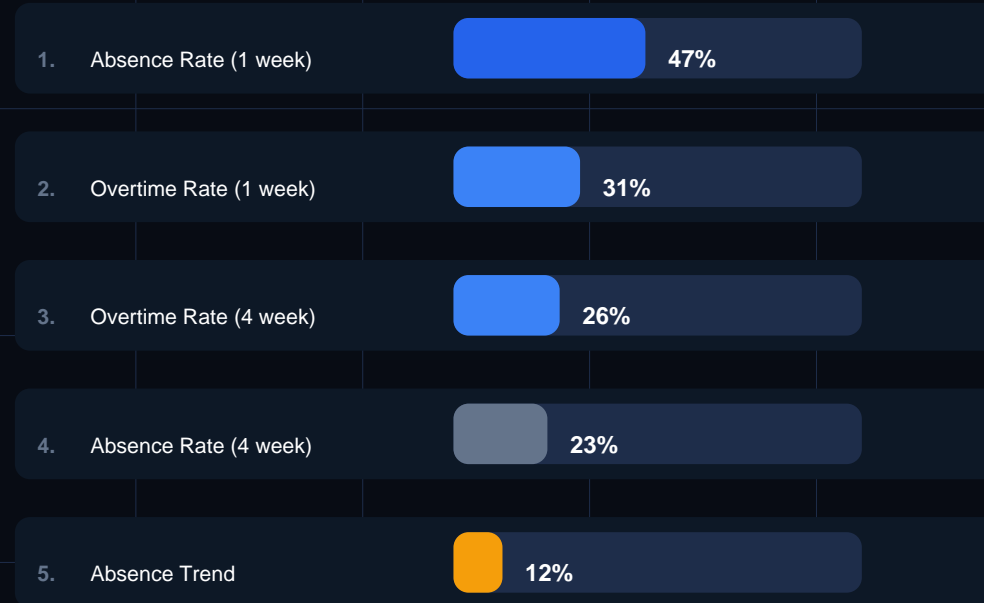
"Activate STAFF\_047 and STAFF\_089 for Early shifts in weeks 3-4."

# How MindMedix AI Works

Built for clinical governance and EU AI Act compliance

Cosa ha imparato il modello

## WHAT THE MODEL LEARNED



Dati e metodologia

## DATA & METHODOLOGY

<b>Data source</b>	34 real Italian hospital wards Ceschia et al., OR for Health Care, 2023
<b>Model</b>	XGBoost multiclass classifier
<b>Validation</b>	Leave-One-Ward-Out cross-validation Simulates deployment to new hospital
<b>Accuracy</b>	97.1% overall (LOWO cross-validation)
<b>Macro F1</b>	0.97 — balanced across all 3 classes
<b>Temporal CV</b>	97.1% predicting held-out week N
<b>Crisis recall</b>	97% — 28/29 crises caught in advance
<b>Privacy</b>	Zero personal data processed
<b>Compliance</b>	GDPR Art.89   EU AI Act ready

MindMedix AI never processes patient data or personal identifiers.

# Workforce Intelligence Overview

All departments — week ending 17 April 2026

DEPARTMENT Reparto	RISK LEVEL Livello di rischio	PROBABILITY Probabilità	KEY SIGNAL Segnale chiave	TIME TO ACT Urgenza	ACTION Azione
Cardiologia	CRISIS	87%	Absence 27.7%	2 weeks	URGENT Urgente
Terapia Intensiva	CRISIS	91%	Overtime 48.3%	1 week	URGENT Urgente
Ortopedia	AT RISK	54%	Absence 18.5%	4 weeks	MONITOR Monitorare
Chirurgia Generale	AT RISK	58%	Absence 19.2%	4 weeks	MONITOR Monitorare
Pronto Soccorso	AT RISK	62%	Refusals +8	3 weeks	MONITOR Monitorare
Geriatria	AT RISK	55%	Absence 20.5%	4 weeks	MONITOR Monitorare
Medicina Interna	STABLE	12%	Absence 5.1%	—	NONE Nessuna
Oncologia	STABLE	9%	Absence 7.2%	—	NONE Nessuna
Neurologia	STABLE	14%	Absence 8.1%	—	NONE Nessuna
Pediatria	STABLE	6%	Absence 4.3%	—	NONE Nessuna

2 Departments

Require immediate action

4 Departments

Require monitoring

4 Departments

Operating normally