Complexity and severity of hospitalized patients in Pulmonology Centres (*COMPASS Study*)

A. Vaghi[1], A.G. Casalini[2], M.M. Lo Storto[3], G. Fiorentino[4], F. Pasqua[5], A. Vianello[6], G. Donazzan[7], on behalf of COMPASS/AIPO Study Group[8]

[1]Pulmonology Unit, A. Salvini Hospital, Garbagnate Milanese, Milan (Italy); [2]Pulmonology and Thoracic Endoscopy Unit, University Hospital of Parma, Parma (Italy); [3]Pulmonology Unit, Madonna delle Grazie Hospital, Matera (Italy); [4]Department of Cardiorespiratory Disease and Rehabilitation, Monaldi Hospital, Naples (Italy); [5]Pulmonary Medicine and Rehabilitation, Villa Delle Querce Hospital, Nemi, Rome (Italy); [6]Respiratory Pathophysiology Division, University-City Hospital of Padua, Padua (Italy); [7]Pulmonology Unit, Bolzano Hospital, Bolzano (Italy); [8] Centro Studi AIPO, Associazione Italiana Pneumologi Ospedalieri, Milano

BACKGROUND

The progressive aging of population and the introduction of innovative techniques for invasive/non-invasive ventilation, or for lung cancer and pulmonary fibrosis diagnosis, led Pulmonologists to treat increasingly critical patients, in a highly specialized setting. **The measurement of the complexity of these patients is a crucial indicator for resources allocation (medical, nursing and instrumental) and proper healthcare performance.**

OBJECTIVES

- To **evaluate the severity of subjects hospitalized in Italian Pulmonary Units**
- To **define**, throughout precise indicators, **the level of complexity of the clinical activity in Pulmonary Units,** and the **competence of Pulmonologists in managing "complex patients".**

METHODS

5 months prospective, real-life, multicentre, Italian study.
Criticality was assessed using the *Modified Early Warning Score* (MEWS; threshold ≥3), and the *National Early Warning Score* (NEWS; threshold ≥4).
Comorbidity was measured through the *Cumulative Illness Rating Scale* (CIRS): specifically, the analysis evaluated the CIRS-SI (severity index), and the CIRS-CI (comorbidity index). **MEWS** and **NEWS** scores were registered at **admission (T1)** and at **discharge (T2); CIRS score** at **admission only (T1).**

RESULTS

799 subjects (69±14yrs) were consecutively enrolled in **18 Italian Pulmonary Units;** patients' characteristics are described in Table and Figure 1.
74% of subjects came from the Emergency Room, reporting a **MEWS, NEWS and CIRS score higher than the population mean** (Table 2).
70% of patients had a diagnosis of acute respiratory failure (ARF), 30% of Chronic Obstructive Pulmonary Disease (COPD).
80% of these patients was treated with oxygen, 30.4% with ventilation, and 62.8% received cardio-respiratory monitoring (Figure 2).
Subjects with lung cancer diagnosis (12.3%) had been evaluated throughout innovative techniques in the majority of cases (64.8%), such as TransBronchial Needle Aspiration (TBNA).
10.8% of patients had pleural effusion, in 26.3% of the cases pulmonologists executed a thoracoscopy.
14.6% of subjects with pulmonary fibrosis received ventilation.
In general, **the analysis shows a reduction of MEWS e NEWS scores after the intervention of pulmonologists** (Figures 3-4).
CIRS, CIRS-SI and CIRS-CI mean scores are higher in critical patients (MEWS ≥3 and NEWS ≥4, Table 3).
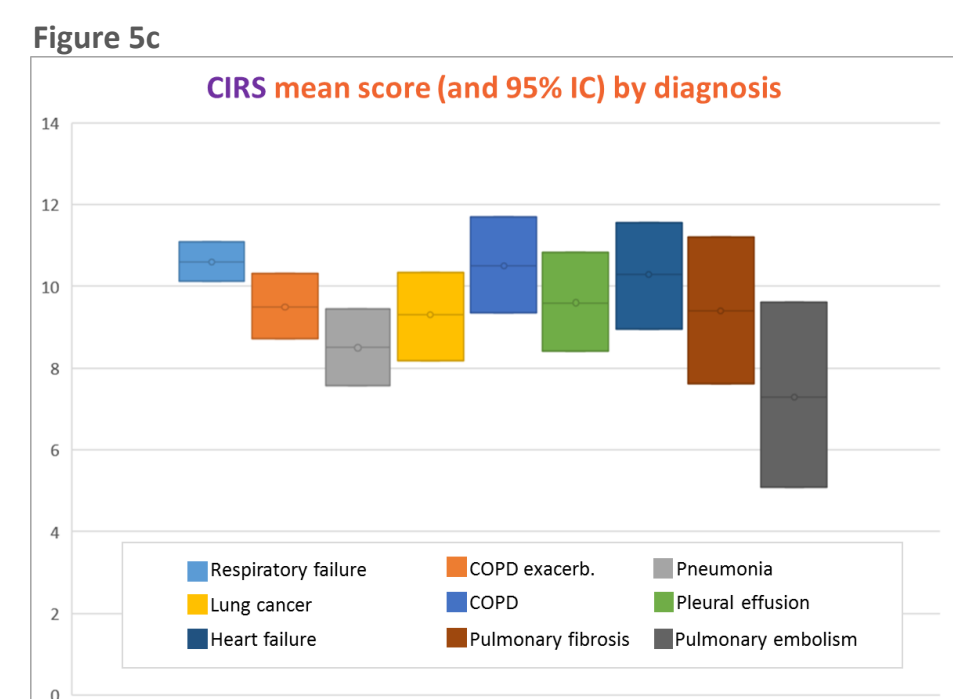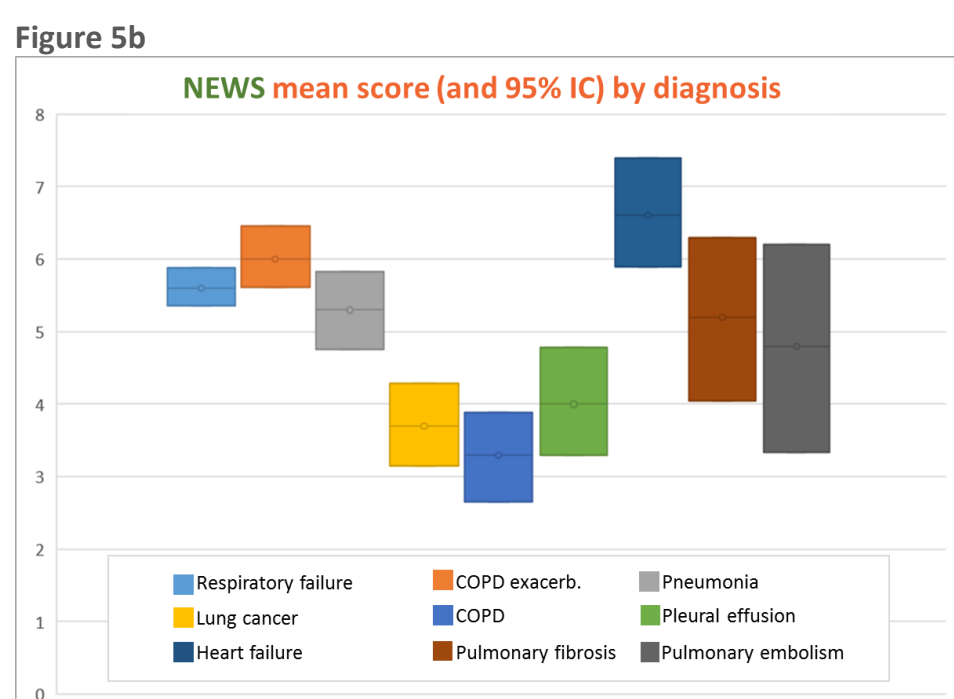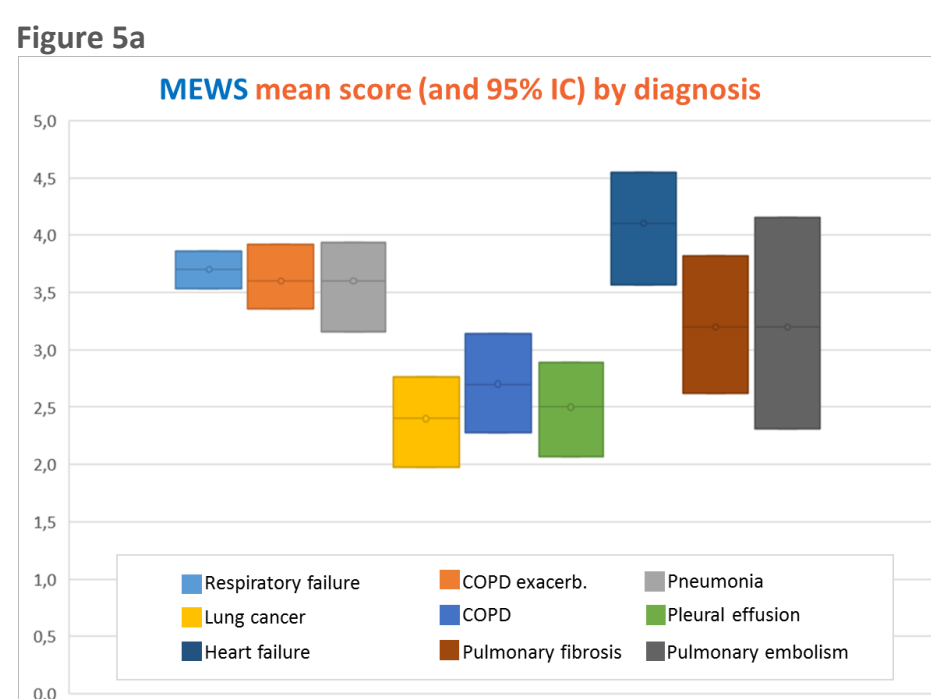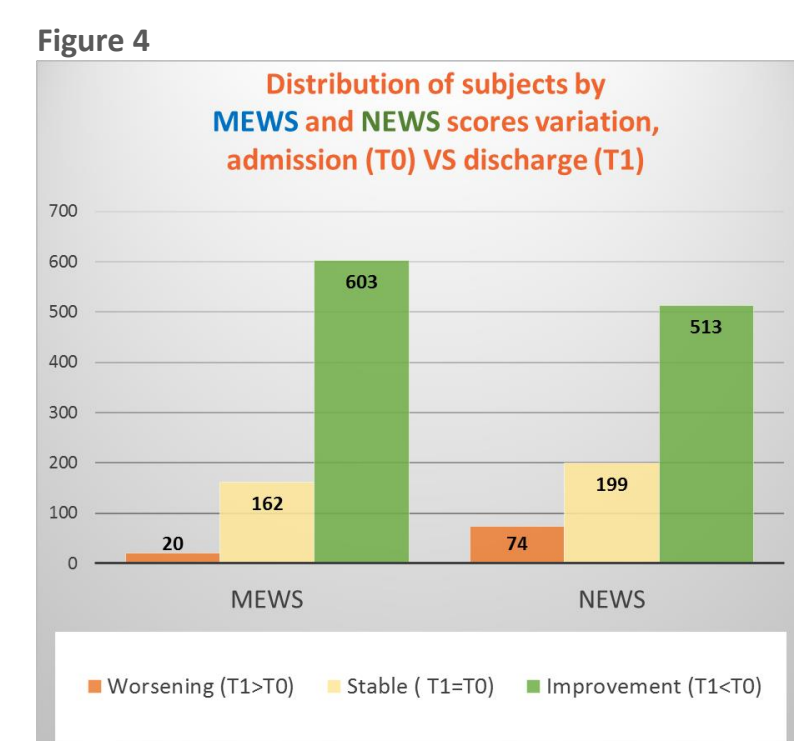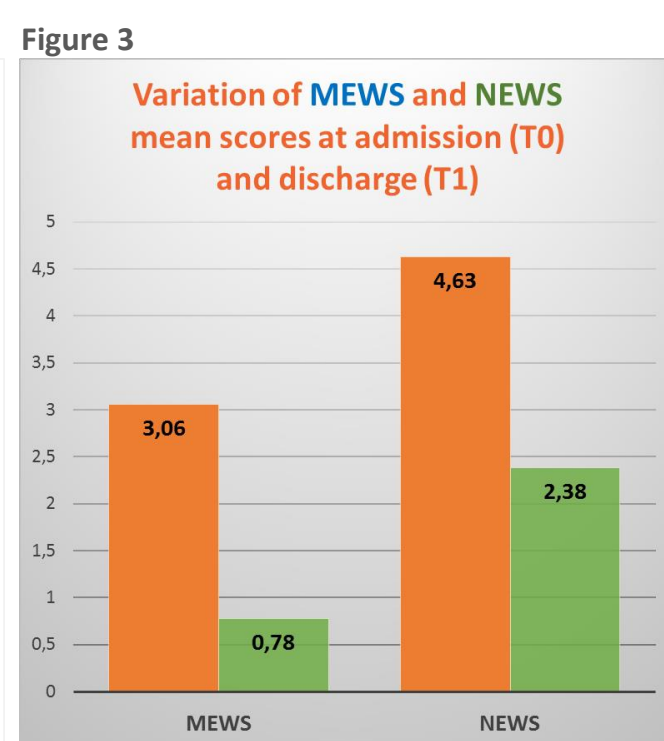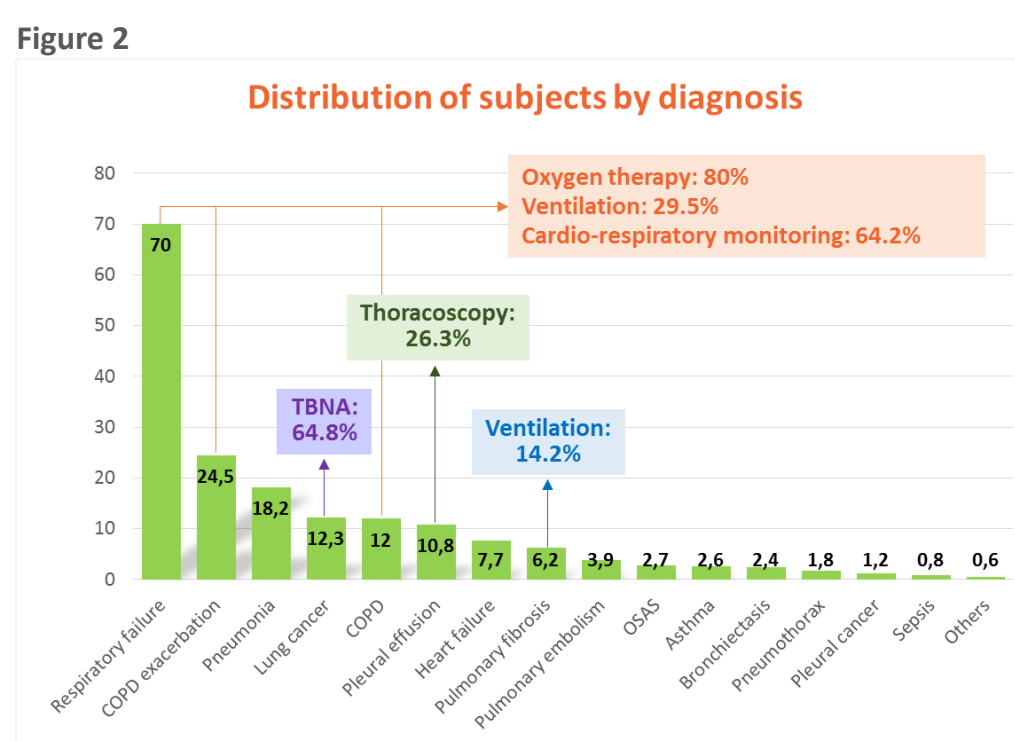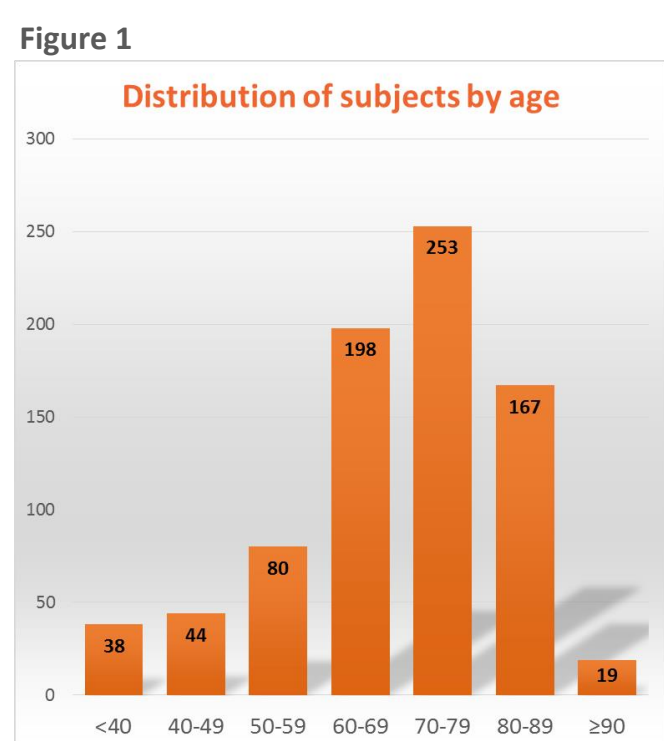Figures 5a, 5b, 5c show the correlation between MEWS, NEWS and CIRS mean scores and the diagnosis.

Table 1

Patients' characteristics at admission (T1)	Population (799)
Age (mean ±SD)	68.9 ±14
Gender (%)	**M:** 62.3%; **F:** 37.7%
FEV1%pred (N, mean ±SD)	222; 62.1 ±24.8
FVE1/FVC (N, mean ±SD)	220; 0.72 ±0.22
SaO2 (N, mean ±SD)	789; 90.8 ±6.8
SaO2<90% (N, %)	253; 31.7%
PaO2≤60% (N, %)	252; 31.5%
MEWS (N, mean ±SD)	3.06 ±2.04
NEWS (N, mean ±SD)	4.63 ±3.16
CIRS (N, mean ±SD)	9.4 ±5.3

Table 2

Access of subjects in Pulmonology Unit	Population (799)	MEWS (N, mean ±SD)	NEWS (N, mean ±SD)	CIRS (N, mean ±SD)
Emergency Room (N, %)	592; 74,1%	3.39 ±1.99	5.18 ±3.04	10.0 ±5.2
Programmed access (N, %)	192; 24%	2.06 ±1.85	2.95 ±2.87	8.7 ±4.6
Other Units (N, %)	15; 1.9%			

Table 3

CIRS	Population (799)	MEWS ≥3 (N, mean ±SD)	NEWS ≥4 (N, mean ±SD)
CIRS absolute value (N, mean ±SD)	799; 9.4 ±5.3	470; 10.3 ±5.3	473; 10.4 ±5.3
CIRS-SI (N, mean ±SD)	330; 2.1 ±0.7	206; 2.1 ±0.7	223; 2.2 ±0.7
CIRS-CI (N, mean ±SD)	362; 3.2 ±2.0	225; 3.4 ±2.0	243; 3.6 ±1.9

Figure 1

Distribution of subjects by age

Figure 2

Distribution of subjects by diagnosis

Figure 3

Variation of MEWS and NEWS mean scores at admission (T0) and discharge (T1)

Figure 4

Distribution of subjects by MEWS and NEWS scores variation, admission (T0) VS discharge (T1)

Figure 5a

MEWS mean score (and 95% IC) by diagnosis

Figure 5b

NEWS mean score (and 95% IC) by diagnosis

Figure 5c

CIRS mean score (and 95% IC) by diagnosis

CONCLUSIONS

COMPASS Study results show that patients, hospitalized in **Pulmonology Units**, are characterized by **acute criticality and complexity.**
The management of these subjects requires a **highly specialized clinical intervention, monitoring and follow-up.**

COMPASS STUDY IS A PROJECT OF THE *DEPARTMENT FOR INSTITUTIONAL RELATIONS AND HEALTH POLICIES IN PULMONOLOGY* OF THE *ITALIAN ASSOCIATION OF HOSPITAL PULMONOLOGISTS (AIPO)*

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