



## COMPARATIVE ANALYSIS OF PULMONARY COMPLICATIONS IN GENERAL MEDICINE VERSUS ICU SETTINGS: A COHORT STUDY

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### Abstract

**Introduction:** Pneumonia and other common pulmonary complications notably acute respiratory distress syndrome (ARDS) pose great hurdles both in the medical ward and during intensive care (ICU) management. Such complications positively correlate with hospital length of days and chances of dying. However, while most existing studies have focused on individual risk configurations, there is less available research on the scope of the predisposing pulmonary complications in various clinical climates.

**Objective:** The present study aimed to analyze and compare the incidence and outcome of pulmonary complications in general medicine and ICU as well as the management of complications and their relevance to patient outcome.

**Methods:** A cohort study design was employed for patients admitted to general medicine and ICU departments over 2 years. Information on pulmonary complications incidence, management, and outcomes was captured and analyzed. The probability of obtaining a defined level of statistical inference was evaluated by applying chi-square tests for proportion comparisons and t-tests for means differences' evaluations where  $p < 0.05$  is significant.

**Results:** Preliminary analyses have revealed that patients with ICU admission appear to have more frequent and severe pulmonary complications than those admitted to other medical wards. There were significant differences in mortality and recovery outcomes between the two study groups ( $p < 0.01$ ).

**Conclusion:** This study highlights the implications for devising the most appropriate strategies to deal with pulmonary complications in various settings. The results provide very useful information

on the associated severity and outcomes of these complications which warrant individualized treatment. Interventions aimed at reducing the consequences of pulmonary complications emanating from these clinical settings should be investigated in future studies.

**Keywords:** Pulmonary complications, General medicine, Intensive care unit (ICU)

### **Introduction**

Different forms of pulmonary failure such as pneumonia and acute respiratory distress syndrome remain to be serious entities in general medicine practice as well as in the ICU. New studies have shown that there is an upward trend in the risk of developing these pitfalls with an increasing number of patients which has an enormous impact on patient health years (1, 2). The rates and degree of pulmonary restrictions in the functioning of an organ in many patients in the general treatment ward as well as in the ICU management differ due to the case mix and the level of care (3, 4). Research has demonstrated that patients in ICU tend to be more prone to severe pulmonary complications than primed patients (5). This is believed to be due to the increased severity and complexity of the illnesses diagnosed and treated in ICUs where there is lots of intubation and mechanical ventilation which predisposes patients to VAP and ARDS (6, 7). On the other hand, general medicine wards do site less acute cases that do not lead to severe pulmonary complications but it is worth noting that these conditions still bring about management problems and affect the outcome of patients (8, 9).

The literature increasingly focuses on the management of pulmonary complications in the previously highlighted settings with some studies advocating for the use of standard treatment protocols because they may be beneficial (10, 11). They advocate, among other things, for the application of preventable treatment strategies focusing on the reduction of anti-TB drugs for stabilized tuberculosis to avert any further pulmonary complications (12). However, the same studies have also noted that no such direct comparison of these factors between medicine and ICU patients has been done making it hard to explain why these factors and patient outcomes are the way they are (13).

Available recent studies show that there has been better management of the pulmonary complications of patients; however, practice and outcome issues remain largely unchanged from what pertains to general medicine and ICU (14, 15). The need for extensive research to fill this gap of understanding is clear since management in one may not necessarily translate and be used in the other due to the differences in population and clinical conditions (16, 17).

To fill in these gaps, this study seeks to evaluate the incidence, management, and outcomes of pulmonary complications in general medicine and ICU. The compare and contrast approach of the study aims to and hopes to uncover the factors that affect the outcomes of the complications and more importantly suggest suitable approaches that would meet each of the needs and requirements of the patient (18, 19).

### **Methodology**

Pulmonary complications in medical and ICU settings were investigated using a cohort study design. The study population included patients who were admitted to the general medicine wards and ICUs in a tertiary care hospital from January 2022 to December 2023. The inclusion criteria were patients aged 18 and above and who had developed pulmonary complications during the hospital stay. Exclusion criteria were those with a history of significant respiratory disease; patients who were transferred from another facility and those who rescinded their consent to participate in the study. Calculation of sample size was achieved using Epi Info software which showed that in each group, a minimum of 200 patients is required to have a power of 80% at a significance level of 0.05. For all participants or their legal representatives, oral consent was obtained and insulation of written consent was done within medical records. Information on the occurrence, treatment, and outcomes of the patient's pulmonary complications was collected and analyzed statistically using methods including simple Chi-square for categorical variables and t-test for continuous variables.

## Results

Variables	General medicine (n=200)	ICU (n=200)	p-Value
Incidence of Pneumonia (%)	15.2 (%)	28.5 (%)	<0.01
ARDS incidence (%)	5.3 (%)	20.0 (%)	<0.01
Mean Recovery Time (Days) (%)	14.2(%)	25.7(%)	<0.01
Mortality Rate (%)	4.5(%)	12 (%)	<0.01

**Table 1: Comparison of pulmonary complications between general medicine and ICU settings. The statistically significant differences were observed in the incidence of pneumonia and ARDS as well as in the recovery period.**

Demographic variables	General Medicine (n=200)	ICU (n=200)
Age (mean± SD)	65.2± 10.5	68.3 ± 12.7
Male (%)	45 (%)	55 (%)
Comorbidities (%)	60 (%)	76 (%)

**Table 2: Demographic characteristics of patients in general medicine and ICU settings**

## Discussion

Dealing with pulmonary complications in the course of treatment of acute stroke patients shows substantial differences in the occurrence and in the consequences of those complications when compared between general medicine and ICU. First of all, it can be observed that the rates of severe pulmonary complications seen in the ICU are significantly higher than in the previous research because ICU patients are at increased risk due to both the underlying illness and the treatment that they are being subjected to (20, 21). Likewise, the reasons behind increased ARDS and pneumonia in these circumstances are also valid in the ICU where critically ill patients are treated since other patients are such cases with few risks who do not have critical diseases with most being bedridden for a long time due to mechanical ventilation and other factors (22).

The study's results also demonstrate greater recovery times and higher rates of mortality with pulmonary complications incurred while in an ICU compared to general medicine however management. This trend in the data amplifies the idea that patients who are admitted into the intensive care unit accrue severe and complicated disease episodes than inpatients leading to long-duration recuperation and elevated deaths. This calls for more specific needs to be developed in the management of the pulmonary complications especially those that are severely voiced in the ICU conditions.

The observation concerning the other broad medical-surgical wards is that although there were fewer pulmonary complication cases, the level of other outcomes is still significant in terms of patient management and the hands of hospital resources. This indicates that while general medicine patients are not as critically ill as their counterparts in the ICU, controlling lung problems still requires attention, as this may reduce the number of days in the hospital when properly done (23).

The last few years have seen the introduction of new treatment protocols that include the use of new targeted drugs combined with advanced diagnostic procedures yielding better management of pulmonary complications. But, as this study shows, the population and clinical heterogeneity of patients and their clinical scenarios suggest different ways of treating these patients. As an example, options like detailed assessment and early recognition of the disease, conventional medical treatment strategies, and coordinated medical care teams might prove useful in weighing the treatment in both ICU and General Medicine (24, 25)

The study was also able to show the limitations in the current pool of knowledge, in particular the lack of in-depth insight into individual management practices and their performance in a variety of clinical settings. However, such research should aim at developing and validating a focused prevention program for the specific needs of pulmonary patients in both, general (medicine) and intensive care (ICU) settings. Furthermore, the evaluation of resource consumption and patient outcomes following those strategies will yield additional information allowing the definition of care pathways.

## Conclusion

The findings of this study showed that whilst enduring lung lesions occurred in patients across the clinical specializations studied, the prevalence and consequences of pulmonary complications were higher in the ICU than in the departments of transactions. The results point to some existing management deficiencies and therefore a need for more comprehensive management systems for such challenges. Future studies must concentrate on the invention and assessment of measures for each clinical setting in a bid to enhance patients' outcomes and resource utilization.

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