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# The Burden of Influenza A Virus Hospitalization in the South Batinah Governorate, Oman: A Retrospective Study (2023–2025)

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## ABSTRACT:

**Background**: The seasonal influenza A virus is a major cause of respiratory morbidity and mortality worldwide, particularly in older adults and those with chronic conditions. Little information is available on hospitalized cases of influenza A in the South Batinah Governorate of Oman. The aim of this study was to describe the clinical and epidemiological features, virologic profile, management, and outcomes of hospitalized patients with laboratory-confirmed influenza A, and to identify factors associated with severe disease.

**Methods**: This was a retrospective observational study at Rustaq Hospital, a secondary care referral hospital. Participants were 208 patients aged 13 years or older admitted to the medical wards during January 2023 through April 2025 with polymerase chain reaction (PCR)-confirmed influenza A. Demographic, clinical, virologic, treatment, and outcome data were extracted from the Al Shifa electronic health record. Associations with severe disease (intensive care unit admission and/or in-hospital death) were assessed using univariate logistic regression. Statistical significance was defined as a two-sided $p < 0.05$.

**Results**: Mean age of the 208 patients was 55.6 ± 20.0 years (median 58.5). Overall, 39.9% (n = 83) were 65 years or older and 49.5% (n = 103) were male. Hypertension was present in 38.5% (n = 80) and diabetes mellitus in 30.8% (n = 64); 15.4% (n = 32) had three or more chronic diseases. The most common presenting symptoms were fever and cough, each in 83.7%. Admissions showed marked seasonal variation (Figure 1A), with 71.6% (n = 149) occurring from September through December and peaking in November. Among the 38.0% (n = 79) of cases that were subtyped, A(H1N1)pdm09 accounted for 92.4% (n = 73). Oseltamivir was given to 90.4% (n = 188) of patients and empiric antibiotics to 82.7% (n = 172). In-hospital mortality was 5.3% (n = 11), ICU admission 5.8% (n = 12), and severe disease 6.7% (n = 14). Only two factors were associated with adverse outcomes: chronic obstructive pulmonary disease (death OR 11.94; severe illness OR 8.55) and chronic kidney disease (death OR 4.79; severe illness OR 4.83).

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**Conclusions**: Hospitalized influenza A cases were predominantly older adults with multiple chronic conditions, and admissions showed marked seasonal variation. Patients with COPD or CKD were at greatest risk of severe illness or death. Despite good adherence to guideline-recommended oseltamivir treatment, the high rate of empiric antibiotic use highlights an opportunity for antimicrobial stewardship. There are also opportunities to improve influenza subtyping and the documentation of vaccination status, and to increase influenza vaccine uptake in at-risk populations.

**Abbreviations**

ARDS: Acute Respiratory Distress Syndrome

CI: Confidence Interval

CKD: Chronic Kidney Disease

COPD: Chronic Obstructive Pulmonary Disease

CPHL: Central Public Health Laboratory

EHR: Electronic Health Record

ESRD: End-Stage Renal Disease

ICU: Intensive Care Unit

IQR: Interquartile Range

IRB: Institutional Review Board

LIS: Laboratory Information System

OR: Odds Ratio

PCR: Polymerase Chain Reaction

SD: Standard Deviation

## INTRODUCTION

Seasonal influenza is one of the leading causes of respiratory illness globally. It is estimated that there are approximately 291,243–645,832 annual influenza-associated respiratory deaths, and that the elderly (adults ≥75 years) are at greatest risk for death due to influenza [1]. The two influenza A virus subtypes responsible for current human circulation are A(H1N1)pdm09 and A(H3N2). These subtypes are responsible for the majority of the most severe cases of seasonal influenza and most influenza-related hospitalizations during each season [2].

Although robust data on the burden and epidemiology of severe influenza exist for some countries in the Eastern Mediterranean Region, they remain limited for many others. For example, national sentinel surveillance in Oman indicated that a substantial proportion of severe acute respiratory infections were caused by influenza; the severity and incidence of these infections varied greatly by age and showed marked seasonal patterns [3]. Similar findings regarding the greater risk to older populations were seen in comparable active-surveillance and hospital-based studies in Saudi Arabia and the Republic of Korea, all of which also demonstrated marked seasonal variation in the burden of severe influenza [4][5].

Influenza and other respiratory viruses experienced a disruption of their circulation due to COVID-19 (which was most evident in historically low levels of influenza activity in 2020 and irregular resurgences that began in 2023) [6] as such it is imperative to characterize hospitalizations related to influenza A in the post-COVID era; this will assist in preparing hospitals locally. Antiviral therapy early in the course of illness with the neuraminidase inhibitor oseltamivir is recommended for all hospitalized individuals with influenza [7]; while the financial burdens imposed upon healthcare systems from hospitalizations attributed to influenza are substantial (including hospitalization-related costs), so too are the additional mortalities beyond what would be expected based upon age and comorbid conditions [8].

Although the South Batinah Governorate of Oman is one of the larger population centers in Oman there are few published reports examining hospitalized influenza A cases. Therefore we performed an examination of past laboratory confirmed cases of influenza A requiring hospital admission at Rustaq Hospital in order to assess patient demographics, subtypes, treatments, and outcomes and to investigate factors associated with developing severe disease.

**Primary Aim:** To characterize the clinical and epidemiological features and in-hospital outcomes of patients hospitalized with laboratory-confirmed influenza A at Rustaq Hospital, South Batinah Governorate, between 2023 and 2025.

**Specific Objectives:**

- To describe the demographic profile, clinical presentation, and comorbidity burden of hospitalized patients.
- To describe the seasonal and temporal distribution of influenza A-associated hospitalizations.
- To describe the distribution of influenza A subtypes and the completeness of subtyping.
- To describe clinical management patterns, including antiviral and antibiotic use.
- To explore factors associated with severe disease and in-hospital mortality.

## MATERIALS AND METHODS

### Study design and settings

A retrospective observational study was conducted at Rustaq Hospital, an Omani secondary care referral hospital serving the South Batinah Governorate. The aim was to assess the magnitude of hospitalization attributable to laboratory-confirmed influenza A virus infection during January 1, 2023 – April 23, 2025.

The data used to conduct this assessment were collected from the Rustaq Hospital's Integrated Electronic Health Record (EHR), known as Al Shifa. Al Shifa EHR is linked to both the Laboratory Information System (LIS) for accessing virology test results and the on-site Cepheid GeneXpert testing platform. Positive samples are sent to the national Central Public Health Laboratory (CPHL) located in Muscat, Oman for further confirmation by subtyping for surveillance purposes.

### Study population and eligibility criteria

The study population comprised adults ≥13 years who were admitted to the medical wards of Rustaq Hospital from January 1, 2023 through April 23, 2025. These patients presented with an influenza-like illness and had laboratory-confirmed influenza A virus infection by polymerase chain reaction (PCR).

Adults ≥13 years were selected based on the hospital's operational definition for adult medical admissions. This criterion ensured that all patients received the same type of clinical management and were categorized consistently in the electronic health record (EHR) system.

Throughout the study period, molecular confirmation of all specimens was performed using the Cepheid GeneXpert system, a cartridge-based, real-time, fully automated PCR platform with cartridges designed to detect influenza A. During the study period it was the only molecular diagnostic analyzer available at Rustaq Hospital. The sensitivity and specificity of the Cepheid GeneXpert system for diagnosing influenza have been well documented and compare favorably with other reference methods for identifying influenza A [9].

Neither rapid antigen testing nor viral culture was used as a primary means of confirming influenza infection. Specimens identified as positive were sent to the Central Public Health Laboratory (CPHL) in Muscat for further characterization to determine the specific subtype.

**Inclusion criteria:**

- Hospital admission at Rustaq Hospital during the study period.
- Laboratory-confirmed influenza A virus infection by PCR.
- Availability of demographic and clinical data in the electronic medical record.

**Exclusion criteria:**

- Incomplete or missing medical records.

- Cases diagnosed by methods other than PCR.

**Data collection**

Data collection began on May 1, 2025, for all eligible patients that had been admitted between Jan. 1, 2023, and April 23, 2025. The trained individuals utilized a standardized, pre-tested data collection tool to evaluate the Al-Shifa Electronic Medical Records. The evaluation of data occurred for each eligible patient.

- Demographic data: age and sex.
- Comorbidities: hypertension, diabetes mellitus, chronic kidney disease, obesity, asthma, chronic obstructive pulmonary disease (COPD), and bronchiectasis.
- Presenting symptoms: fever, cough, sore throat, shortness of breath, and fatigue.
- Admission timing: month and year of admission.
- Virological data: influenza A PCR result and, when available, subtype (A(H1N1)pdm09 or A(H3N2)).
- Management: antiviral (oseltamivir) and antibiotic administration.
- Outcomes: intensive care unit (ICU) admission, prolonged hospital stay, in-hospital mortality, and discharge status.

Influenza vaccine history was collected during the beginning of this study; however, it was removed from the final analysis due to significant technical challenges with acquiring the information and inconsistent documentation throughout the records.

**Data analysis**

IBM SPSS Statistics (Version 28.0) was utilized to complete statistical analysis [10]. Continuous and categorical variables were presented using frequency/percentage for categorical variables and mean ± SD and/or median ± IQR for continuous variables based upon variable distributions.

- Temporal trends in influenza A hospitalizations were described as monthly and yearly frequencies and displayed graphically.
- Categorical variables were compared between groups using the Chi-square test or Fisher's exact test, as appropriate.
- Continuous variables were compared using the independent-samples t-test or the Mann–Whitney U test, as appropriate for the data distribution.
- Associations between patient characteristics and severe disease (defined as ICU admission and/or in-hospital death) were explored using single-predictor (univariate) logistic regression, with results expressed as odds ratios (ORs) and 95% confidence intervals (CIs).

Because of the limited number of severe outcome events, multivariable logistic regression was not performed, in order to avoid model overfitting and unreliable estimates of association with severe disease. The associations with severe disease are therefore reported as exploratory univariate estimates. A p-value less than 0.05 (two-tailed) was considered statistically significant.

**Ethical considerations**

The study protocol was reviewed and approved by the Research and Ethics Committee (Institutional Review Board, IRB) of the South Batinah Governorate, Directorate General of Health Services, Ministry of Health, Oman (research code 02052025; approved 11 May 2025). Because the study used anonymized, de-identified data obtained through routine review of hospital records, the committee granted a waiver of informed consent. Confidentiality was maintained, and identifiable patient information was removed before analysis.

## RESULTS

**Demographic and baseline characteristics**

A total of 208 patients admitted to hospital with confirmed influenza A were studied. The mean age was 55.6 ± 20.0 years, the median was 58.5 years, and the interquartile range (IQR) was 39–71 years. The youngest patient was 15 years old and the oldest was 96 years. In terms of sex, there were nearly equal numbers of male (n = 103, 49.5%) and female (n = 105, 50.5%) patients.

Many of the patients in this study suffered from multiple health conditions (comorbidities). Hypertension (38.5%), Diabetes Mellitus (30.8%), and Chronic Kidney Disease (12.0%) were the most common. More than half of the participants (54.3%) had

at least one health condition (comorbidity) and 15.4% had three or more. Most patients came from within the South Batinah Governorate, chiefly from Ar Rustaq (52.9%) and Al Musanaah (17.3%).

**Table 1.** Demographic and baseline characteristics (N = 208).

| Characteristic | Value |
|---|---|
| **Age, years — mean ± SD** | 55.6 ± 20.0 |
| **median (IQR)** | 58.5 (39–71) |
| **range** | 15–96 |
| **Age group, n (%):** | |
| **13–29** | 24 (11.5) |
| **30–44** | 48 (23.1) |
| **45–59** | 35 (16.8) |
| **60–74** | 61 (29.3) |
| **≥75** | 40 (19.2) |
| **≥65 (subtotal)** | 83 (39.9) |
| **Sex, n (%):** | |
| **Male** | 103 (49.5) |
| **Female** | 105 (50.5) |
| **Comorbidities, n (%):** | |
| **Hypertension** | 80 (38.5) |
| **Diabetes mellitus** | 64 (30.8) |
| **Chronic kidney disease** | 25 (12.0) |
| **Obesity** | 22 (10.6) |
| **Asthma** | 15 (7.2) |
| **COPD** | 9 (4.3) |
| **Bronchiectasis** | 5 (2.4) |
| **Number of comorbidities, n (%):** | |
| **0** | 95 (45.7) |
| **1–2** | 81 (38.9) |
| **≥3** | 32 (15.4) |
| **Region of residence, n (%):** | |
| **Ar Rustaq** | 110 (52.9) |
| **Al Musanaah** | 36 (17.3) |
| **Barka** | 21 (10.1) |

| | |
|---|---|
| **Al Awabi** | 18 (8.7) |
| **As Suwayq** | 10 (4.8) |
| **Nakhal** | 7 (3.4) |
| **Wadi Al Maawil** | 3 (1.4) |
| **Outside South Batinah** | 3 (1.4) |

**Clinical presentation**

The most frequent symptom presentations reported were fever and a cough both at an 83.7% rate; then shortness of breath at 38.5%, then fatigue at a 30.3% rate and finally a sore throat at 13.5%.

**Table 2.** Presenting symptoms (N = 208).

| Symptom | n (%) |
|---|---|
| **Fever** | 174 (83.7) |
| **Cough** | 174 (83.7) |
| **Shortness of breath** | 80 (38.5) |
| **Fatigue** | 63 (30.3) |
| **Sore throat** | 28 (13.5) |

**Temporal and seasonal distribution**

Admissions to the hospital showed no uniformity in relation to when they occurred during this time frame. During 2023 there were 77 admissions or 37.0%. In 2024 there were 103 admissions or 49.5%; and in 2025 (for the first four months), there were 28 admissions or 13.5%. A very apparent seasonality trend existed as well. There were 149 admissions that occurred from September through December. This had its peak in November with 52 admissions.

**Table 3.** Distribution of admissions by year and month.

| Period | n |
|---|---|
| **Year 2023** | 77 (37.0%) |
| **Year 2024** | 103 (49.5%) |
| **Year 2025 (Jan–Apr)** | 28 (13.5%) |
| **January** | 9 |
| **February** | 13 |
| **March** | 9 |
| **April** | 12 |
| **May** | 4 |
| **June** | 1 |
| **July** | 6 |

| | |
|---|---|
| **August** | 5 |
| **September** | 21 |
| **October** | 36 |
| **November** | 52 |
| **December** | 40 |

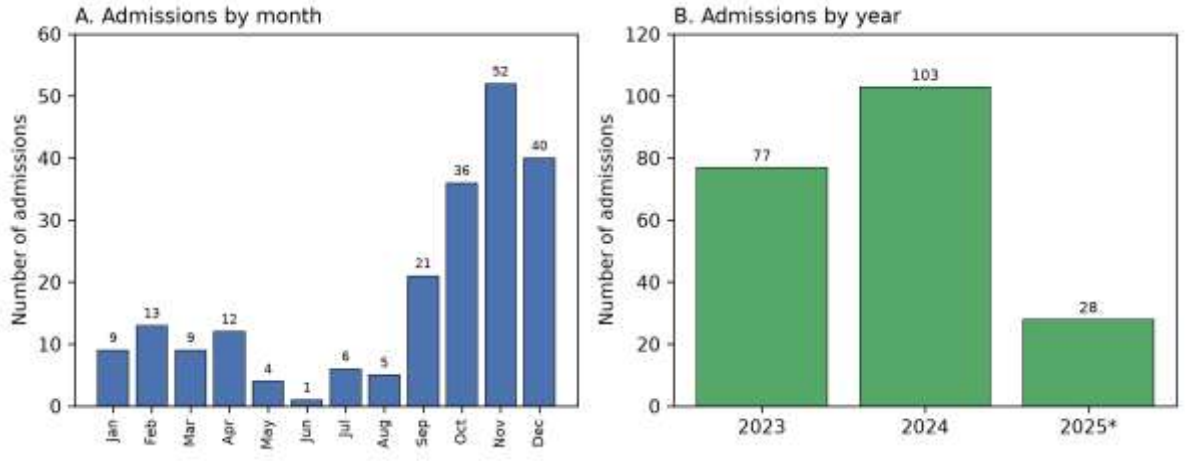


**Figure 1.** Temporal distribution of the 208 influenza A hospitalizations. (A) Admissions by calendar month (all years combined), showing a peak between September and December (maximum in November); (B) admissions by year (2025 includes January–April only).

**Influenza A subtypes**

Only 79 patients (38.0%) were subtyped, while 129 (62.0%) were not. Among those subtyped, 92.4% were A(H1N1)pdm09 and 7.6% were A(H3N2).

**Table 4.** Influenza A subtype distribution (N = 208).

| **Subtype** | **n (%)** |
|---|---|
| **A(H1N1)pdm09** | 73 (35.1) |
| **A(H3N2)** | 6 (2.9) |
| **Not subtyped** | 129 (62.0) |
| ***H1N1 among subtyped (n = 79)*** | *73 (92.4)* |

**Antiviral treatment**

Antiviral therapy with oseltamivir was administered to the majority of patients (188/208, 90.4%).

**Table 5. Antiviral treatment (N = 208).**

| **Oseltamivir** | **n (%)** |
|---|---|
| **Given** | 188 (90.4) |
| **Not given** | 20 (9.6) |

### Antibiotic use

Antibiotics were prescribed to 172 patients (82.7%), and 154 (74.0%) received both antiviral and antibiotic therapy.

**Table 6.** Antibiotic use (N = 208).

| Antibiotics | n (%) |
|---|---|
| **Given** | 172 (82.7) |
| **Not given** | 36 (17.3) |
| ***Received both antiviral + antibiotic*** | *154 (74.0)* |

### Severity and mortality outcomes

Overall, 196 patients (94.2%) were discharged and 11 (5.3%) died in hospital. ICU admission was required in 12 patients (5.8%), and 6 (2.9%) had a prolonged hospital stay. Severe disease (ICU admission and/or in-hospital death) occurred in 14 patients (6.7%). In-hospital mortality was significantly higher among patients with COPD (OR 11.94, 95% CI 2.52–56.58; p = 0.008) and chronic kidney disease (OR 4.79, 95% CI 1.29–17.73; p = 0.030).

**Table 7.** Clinical outcomes (N = 208).

| Outcome | n (%) |
|---|---|
| **Discharged** | 196 (94.2) |
| **In-hospital death** | 11 (5.3) |
| **ICU admission** | 12 (5.8) |
| **Prolonged stay** | 6 (2.9) |
| **Severe disease (ICU or death)** | 14 (6.7) |

**Table 7** (continued). Factors associated with in-hospital mortality.

| Factor | Died / total | OR (95% CI) | p |
|---|---|---|---|
| **COPD** | 3 / 9 | 11.94 (2.52–56.58) | 0.008 |
| **Chronic kidney disease** | 4 / 25 | 4.79 (1.29–17.73) | 0.030 |
| **Hypertension** | 6 / 80 | 1.99 (0.59–6.77) | 0.34 |
| **Diabetes mellitus** | 4 / 64 | 1.30 (0.37–4.62) | 0.74 |
| **Age ≥65** | 3 / 83 | 0.55 (0.14–2.13) | 0.53 |

### Factors associated with severe disease (exploratory)

In univariate (single-predictor) analysis, chronic obstructive pulmonary disease (OR 8.55, 95% CI 1.88–38.82; p = 0.016) and chronic kidney disease (OR 4.83, 95% CI 1.47–15.84; p = 0.016) were the only factors significantly associated with severe disease (Table 8). Other characteristics — including having three or more comorbidities, male sex, hypertension, diabetes mellitus, and age ≥65 years — were not significantly associated with severe disease. Given the small number of severe events (n = 14), these associations should be regarded as exploratory.

**Table 8.** Univariate factors associated with severe disease (ICU admission or in-hospital death), N = 208.

| Factor | Severe / total | OR (95% CI) | p |
|---|---|---|---|
| **COPD** | 3 / 9 | 8.55 (1.88–38.82) | 0.016 |
| **Chronic kidney disease** | 5 / 25 | 4.83 (1.47–15.84) | 0.016 |
| **≥3 comorbidities** | 4 / 32 | 2.37 (0.70–8.09) | 0.24 |
| **Male sex** | 9 / 103 | 1.91 (0.62–5.92) | 0.28 |
| **Hypertension** | 7 / 80 | 1.66 (0.56–4.92) | 0.40 |
| **Diabetes mellitus** | 5 / 64 | 1.27 (0.41–3.96) | 0.77 |
| **Age ≥65** | 4 / 83 | 0.58 (0.18–1.92) | 0.41 |

*ORs were estimated by univariate (single-predictor) logistic regression / 2×2 tables with the Haldane–Anscombe correction where a zero cell was present; Fisher's exact test was used for p-values. No multivariable model was fitted given the limited number of events.*

## DISCUSSION

We characterized the clinical features, virological pattern, treatment, and in-hospital outcomes of 208 adult patients admitted with laboratory-confirmed influenza A at a secondary care hospital in the South Batinah Governorate of Oman from 2023 through 2025. The cohort was relatively old (median age 58.5 years; approximately 40% aged ≥65 years), with a nearly equal sex distribution. Comorbid illness was common, most often hypertension (38.5%) and diabetes mellitus (30.8%); 15.4% of patients had three or more chronic conditions. Fever and cough (each 83.7%) were the most common presenting symptoms. PCR confirmed infection in all but one case (99.5%). Among subtyped cases, A(H1N1)pdm09 accounted for over 92%. Oseltamivir was used in approximately 90.4% of patients and empiric antibiotics in approximately 82.7%. There were 11 in-hospital deaths (5.3%), 12 ICU admissions (5.8%), and 14 patients (6.7%) with severe disease; approximately 95% of patients were discharged. COPD and CKD were significantly associated with an increased risk of severe illness and death.

Our cohort was substantially older than those in previous studies of Omani influenza surveillance, in which the burden of influenza-related hospitalization was seen at both extremes of age. Although the Omani national survey had a younger overall median age, owing to the large number of young children included, adults aged ≥65 years had the highest case fatality among all influenza patients surveyed [3]. Similarly, studies in neighboring Saudi Arabia demonstrated, on the basis of a three-season analysis, that the rate of influenza-related hospitalization was significantly higher among individuals aged ≥65 years, at 269 per 100,000 population [4]. The substantial proportion of older adults in our cohort (39.9% aged ≥65 years) and the median age of 58.5 years are consistent with the documented age gradient of severe influenza and reflect our focus on adult medical-ward admissions. As in previously described profiles of hospitalized influenza cases in the Gulf region, a substantial proportion of our cohort had multiple pre-existing chronic conditions, most commonly hypertension (38.5%) and diabetes mellitus (30.8%). These findings reflect the growing proportion of older, multimorbid patients among hospitalized influenza cases and set the context for examining relationships between risk factors and outcomes.

The timing of hospital admission was clearly seasonal, with 71.6% of patients hospitalized between September and December and a single peak month (November), alongside an uneven distribution across years (37.0% in 2023, 49.5% in 2024, and 13.5% in the first four months of 2025). These patterns are consistent with the well-documented disruption of influenza transmission by the COVID-19 pandemic, when influenza circulated at very low levels in 2020 before returning irregularly [6]. Post-pandemic global analyses have similarly noted an asynchronous resurgence of respiratory viruses, with influenza A returning sporadically across different regions [11]. The finding that the largest share of hospitalizations occurred during the 2024 influenza season is consistent with international surveillance reports describing 2024–25 as a high-severity season, with hospitalization rates well above historical medians across age groups [12].

Among the 38.0% of cases that were subtyped, A(H1N1)pdm09 comprised the vast majority (92.4%), with the remainder being A(H3N2). Both A(H1N1)pdm09 and A(H3N2) are responsible for most severe seasonal influenza A disease [2], and the

predominance of A(H1N1)pdm09 in our data is consistent with Eastern Mediterranean regional surveillance, which has reported A(H1N1)pdm09 as the most common subtype among severe influenza cases across several countries, including Oman [13]. The small number of subtyped samples may have limited the precision of these estimates, as noted in the study limitations.

Most patients (90.4%) received oseltamivir, reflecting adherence to clinical guidelines that recommend prompt antiviral treatment for all hospitalized patients with suspected or confirmed influenza, regardless of symptom duration [7]. This high level of antiviral use is clinically encouraging, as an individual-participant-data meta-analysis of hospitalized patients found that neuraminidase-inhibitor treatment was associated with lower mortality than no treatment, with the greatest benefit when treatment was started early after symptom onset [14]. The high use of oseltamivir in this cohort may therefore represent an appropriate and potentially outcome-modifying practice.

In contrast, empiric antibiotics were prescribed to 82.7% of patients, and 74.0% received both an antiviral and an antibiotic. This high rate of antibiotic prescribing exceeds what would be expected from the incidence of bacterial co-infection in influenza. A recent systematic review and meta-analysis found that although antibiotics were prescribed to more than half of adults hospitalized with influenza, laboratory-confirmed bacterial co-infection was documented in fewer than one fifth of cases, suggesting a substantial gap between prescribing and true infection [15]. These findings point to likely overprescribing and a clear opportunity for antimicrobial stewardship intervention in the management of hospitalized influenza.

The presence of chronic comorbidity was significantly associated with poor outcomes in our study population. CKD was associated with both severe disease (OR 4.83) and in-hospital mortality (OR 4.79). These findings are supported by large national studies showing that end-stage renal disease (ESRD) is an independent predictor of mortality among patients hospitalized with influenza [16].

COPD showed the strongest association with both severe disease (OR 8.55) and death (OR 11.94). COPD is well established as a risk factor for severe influenza and acute respiratory distress syndrome (ARDS), and patients with COPD who contract influenza have higher mortality than those without COPD [17]. Neither diabetes nor obesity was significantly associated with severe outcomes in this study, most likely because of the relatively small sample size; however, both conditions have previously been identified as contributing to influenza severity. Meta-analyses have shown that individuals with diabetes experience worse influenza-related outcomes [18], and that obese individuals experience increased influenza severity and mortality [19]. The high prevalence of hypertension and diabetes mellitus in this population illustrates the impact of non-communicable disease on severe influenza in the Gulf region.

This research is also limited. The first limitation is that it uses a single-center, retrospective study using electronically recorded data which may have introduced both information and selection bias and may not provide a full representation of all hospitals in Oman. The second limitation is that only 38.0% of the patient population had their influenza subtyped which limits our ability to make conclusions regarding the specific subtypes of the virus that were prevalent. Additionally, there were too few severe events (n=14) to perform multiple variable adjustments for the possible risk factors associated with these events, thus we can consider these associations as exploratory and possibly biased. Another limitation of this study is that it was unable to ascertain whether or not the participants received influenza vaccinations, and since receipt of influenza vaccines decreases the likelihood of being hospitalized due to complications from influenza infections and receiving severe outcomes [17, 18], the absence of vaccination status in the analysis represents a significant omission especially since vaccination rates for individuals with chronic health conditions in the Gulf Region remain low compared to international standards [20]. Lastly, the time period used in this study was based upon when complete and quality electronically recorded data became available (2023-2025), despite its limitations, this study provides one of the first detailed descriptions of Influenza A in hospitalized patients in South Batinah Governorate and will allow for localized evidence-based decision making for clinicians regarding clinical practices, antimicrobial use, and local vaccination strategies.

## CONCLUSIONS

This retrospective study (N = 208) examined adults hospitalized with confirmed influenza A in the South Batinah Governorate of Oman from 2023 through 2025. Influenza A — predominantly A(H1N1)pdm09 — affected an older population with multiple chronic conditions and followed a seasonal pattern that peaked during the fall–winter months. In-hospital mortality among confirmed cases was 5.3%, and patients with COPD or CKD were at greater risk of severe illness or death. Oseltamivir use was high and consistent with current guidelines; however, the observed rate of empiric antibiotic prescribing suggests opportunities to improve antimicrobial stewardship. Limitations in virologic subtyping and the absence of vaccination data

further highlight key regional priorities, including improving vaccine coverage in patients with chronic conditions, strengthening virologic subtyping, documenting vaccination status, and promoting appropriate antibiotic use. Multicenter studies with larger numbers of confirmed cases will be needed to validate risk factors for severe influenza in Oman and to inform prevention strategies.

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