

# Usefulness of systematic molecular Influenza screening in patients admitted to the hospital during an epidemic wave: positivity ratios and viral loads according to symptomatology

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## Introduction

### Background:

Systematic molecular screening for SARS-CoV-2 was implemented for hospitalized patients in the "Ziekenhuis Netwerk Antwerp" in order to prevent nosocomial transmission. The screening was performed irrespective of symptoms or reason for admission. Nasopharyngeal swabs were analyzed on the Roche Liat platform (Roche Diagnostics®), producing results for both SARS-CoV-2 and Influenza A/B.

### Objectives:

The purpose of the study was to evaluate Influenza positivity ratios according to symptomatology at presentation.

Viral loads were calculated in perspective of symptoms and Influenza vaccination status. The study was conducted during the Belgian epidemic 2022 Influenza wave, beginning in February.

## Methods

### Sample collection:

Only screenings performed for patients that were hospitalized following a visit at the emergency department were included. Results of the Roche Liat PCRs that were executed between 1st February 2022 and 23 March 2022, were extracted from the Laboratory Information System. The extraction included patient characteristics (age, gender, date of admission, date of discharge) and test characteristics (date of analysis, Ct-value for positive samples). The symptomatology and the reason for hospitalization were obtained from the medical reports. The vaccination status was found in the online national registry (Vaccinet).

### Symptomatology:

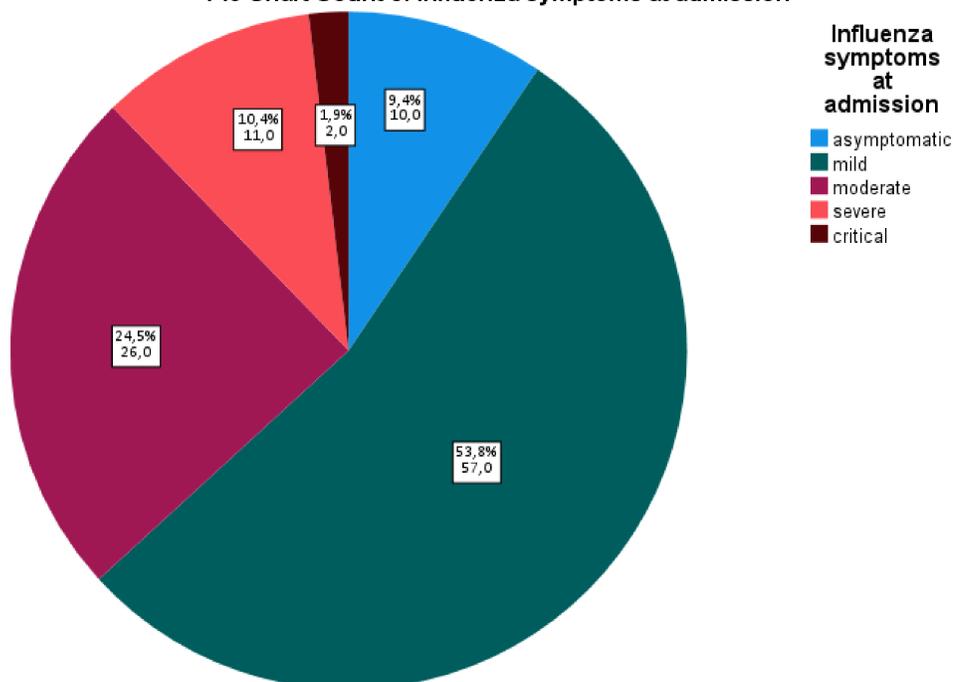
Classification of the symptomatology included: asymptomatic carriage for patients without viral symptoms, mild illness for patients with viral symptoms who did not have clinical evidence for lower respiratory disease, moderate illness for patients with evidence for lower respiratory disease (shortness of breath, abnormal chest imaging) but without the need for oxygen supply, severe illness for patients who needed oxygen supply (SpO<sub>2</sub> <94%, respiratory rate >30 breaths/min), critical illness for patients with respiratory failure or evolution to shock, and deceased patients.

### Statistics:

Statistical analysis included the positivity ratio for each week, symptomatology distribution in positive subjects, Ct-value distribution for each category of symptomatology and comparison of symptomatology for vaccinated versus non-vaccinated patients.

## Symptoms of Influenza positive patients

Pie Chart Count of Influenza symptoms at admission



## Results and conclusions

### Results:

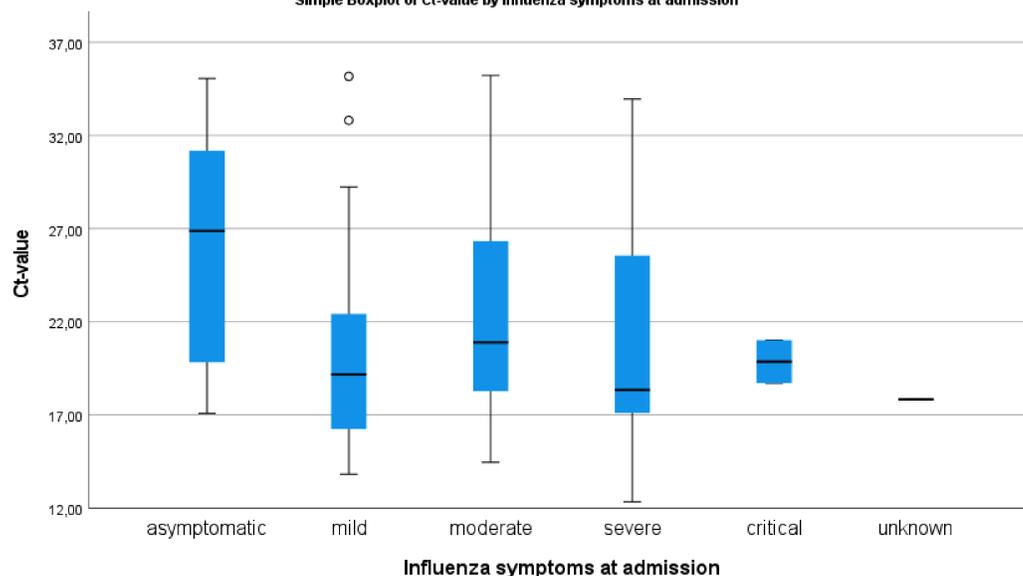
During the first weeks of the Influenza 2021-2022 season, a total of 2520 patients were tested at hospital admission of whom 107 tested positive for Influenza A. Most of them presented with only mild symptoms. A smaller proportion presented as asymptomatic carrier. The Ct-value differed significantly between the groups with the highest Ct-value in the asymptomatic patients and the lowest Ct-value in patients with critical symptomatology. Some asymptomatic patients also presented with high viral loads (3 out of 10 had a Ct-value <24). 4 patients with a positive test had a registered Influenza vaccine of whom 1 had severe, 2 had moderate and 1 had mild symptoms. 3 of 4 vaccinated patients carried high viral loads.

### Conclusions:

Our results show that, by only testing moderate/severe symptomatic patients during an epidemic Influenza wave, a substantial proportion of viral carriers will remain undetected, thereby potentially leading to nosocomial transmission.

## Ct-values according to the symptomatology

Simple Boxplot of Ct-value by Influenza symptoms at admission



## Influenza positivity per week

