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Emergency Department Re-attendances During the COVID-19 Pandemic: An Observational Cross-Sectional Analysis

Krishna Prasad Gopalakrishna Pillai[1], Zeyar Win Naing[2]

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Abstract

Background: Emergency Department (ED) re-attendances are one of the clinical quality indicators to measure the quality of care delivered in the UK. There isn't much information on ED re-attendance rates and reasons responsible for it during the COVID-19 pandemic. We aim to establish the ED re-attendance rate during the COVID-19 pandemic.

Methods: Data for this single centre study was compiled from Symphony, the department's electronic patient records. We chose the month of April 2020 for this study and subsequently followed up to 28 days for re-attendances. Only patients aged 18 years and older, presenting with COVID-19 symptoms who were discharged from ED were included (n=310). We also studied the hospital admission and mortality rates among the patients who had re-attended.

***Results*:** Of the 310, 65 (21%) patients re-attended the ED more than once within 28 days and 27.6% of them belonged to the 41-50 age group. 30 (46.1%) patients were males and 35 (53.8%) were females. The majority (44.6%) of them were of white ethnicity. Among the re-attendees, most of them re-attended only once and within 7 days. Most of the re-attended patients were discharged and only 21 (32.3%) patients had a hospital admission. Of the admitted patients, 6 (28.5%) died in the hospital. Of the patients who died, 5 had tested positive for COVID-19.

Conclusions: ED re-attendances were significantly high during the COVID-19 pandemic compared to the national average from previous years.

Keywords: Re-attendances; COVID-19; Emergency Department.

INTRODUCTION

In the United Kingdom, the performance of emergency departments are assessed through a set of performance indicators that are set and used by the National Health Service (NHS) to provide information on the quality of care of EDs to help support quality improvement. Unplanned emergency department re-attendances are one of these indicators. The other indicators include time to initial assessment, time to treatment, total time spent in the emergency department, left before being seen for treatment and total time spent in the emergency department less than or equal to 4 hours.[1] An example of good practice would be for hospitals to have an unplanned re-attendance rate of less than 5%.[2]

The global pandemic namely COVID-19 (caused by SARS-CoV-2) has brought with it enormous challenges on a scale never seen before in our

Author's Affiliation: [1]Senior Clinical Fellow, [2]Junior Clinical Fellow, Department of Emergency Medicine, Luton and Dunstable NHS University Hospital, Luton, United Kingdom.

Corresponding Author: Zeyar Win Naing, Junior Clinical Fellow, Department of Emergency Medicine, Luton and Dunstable NHS University Hospital, Luton, United Kingdom.

E-mail: krsnaveni@gmail.com

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lifetimes. Health services in the United Kingdom had to be radically altered in order to prepare for a rapid rise in Covid-19 cases, and the urgent and emergency care system has been put to the test.[3] As of October 9, 2020 there have been 36.7 million cases and 1 million deaths attributed to COVID-19 worldwide and the numbers are still rising.[4] The most number of deaths occurred in the month of April 2020 in the United Kingdom.[5]

From 2009-10 to 2018-19, re-attendance rates (within 7 days) have increased from 7% to 9% according to data from NHS Digital.[6] There isn't much information on re-attendance rates and the reasons for it during the COVID-19 pandemic. We aim to establish the ED re-attendance rate during the COVID-19 pandemic.

METHODS

This was a cross-sectional retrospective observational study. The study was done at Luton and Dunstable University Hospital, which is a 700 bedded hospital, catering to over 350,000 people in Bedfordshire, the north of Hertfordshire and parts of Buckinghamshire. Patient data was collected from Symphony, the electronic records system, for the month of April 2020.

Inclusion criteria: Patients who were 18 years or more, presenting to the emergency department with COVID-19 symptoms and getting discharged following treatment. The standards used for defining a patient with COVID-19 symptoms were in accordance with the Public Health England guidance.[7] The re-attendances were only included if they presented again to the emergency department with any of the COVID-19 symptoms and not for any other illness such as head injury or fractures.

Patients were excluded if: They were less than 18 years, presenting with non-COVID symptoms or they required admission for COVID symptoms at the first presentation.

The data collected from each subject included age, gender, ethnicity, co-morbidities, and chief complaints on presentation. In terms of re-attendances, we looked at the number of re-attendances in different time intervals (within 7 days, 8-14 days and 15-28 days) as well as frequency of re-attendances. We also looked into the outcomes of patients which had admission on their re-attendance in terms of HDU/ICU admission, need for mechanical ventilation, discharge from the hospital and mortality.

All data were collected, tabulated and statistically analysed using Microsoft Excel for Windows. The findings were presented as tables and pie-charts.

RESULTS

Population and Demographics

A total of 310 patients were included in the study. The characteristics of the study population are displayed in Table 1.

Table 1: Characteristics of the study population (n=310)

Age group (in years)	
18-30	35 (11.29%)
31-40	72 (23.22%)
41-50	88 (28.38%)
51-60	59 (19.03%)
61-70	25 (8.06%)
71-80	16 (5.16%)
81-90	12 (3.87%)
91-100	3 (0.96%)
Gender	
Male	125 (40.32%)
Female	185 (59.67%)
Ethnicity	
White	158 (50.96%)
Black	24 (7.74%)
Asian	76 (24.51%)
Not Stated/not specified	50 (16.12%)
Comorbidities	
Asthma	68 (21.93%)
Chronic Obstructive Pulmonary Disease	25 (8.06%)
Hypertension	42 (13.54%)
Diabetes Mellitus	22 (7.09%)
Dyslipidemia	7 (2.25%)
Active malignancy	4 (1.29%)
Chronic kidney disease	0 (0.00%)
Chronic liver disease	0 (0.00%)
Coronary artery disease	6 (1.93%)
Cerebrovascular disease	0 (0.00%)
Others	60 (19.35%)
Chief complaints	
Fever	142 (45.80%)
Cough	207 (66.77%)
Shortness of breath	251 (80.96%)
Loss of smell	8 (2.58%)
Loss of taste	6 (1.93%)
Chest pain	37 (11.93%)
Chest tightness	14 (4.51%)
Vomiting	5 (1.61%)
Diarrhoea	8 (2.58%)
Myalgia	39 (12.58%)

Age group, gender and ethnicity

The majority of the study population belonged to the 41-50 age group (28.38%). Most of them were females (59.67%) and of white ethnicity (50.96%).

Co-Morbidities and Chief Complaints

Bronchial Asthma (21.93%) was the most commonly observed co-morbidity whereas most candidates had shortness of breath (80.96%), cough (66.77%) and fever (45.80%) as their chief complaints among others.

Re-Attendances and their Outcomes

Of the 310 patients studied, 65 patients (21%) re-attended the ED more than once within 28 days. The maximum frequency of re-attendances was noted only once and that was within 7 days (Fig. 1). Most of the re-attended patients were discharged and only 21 (32.3%) patients had a hospital admission

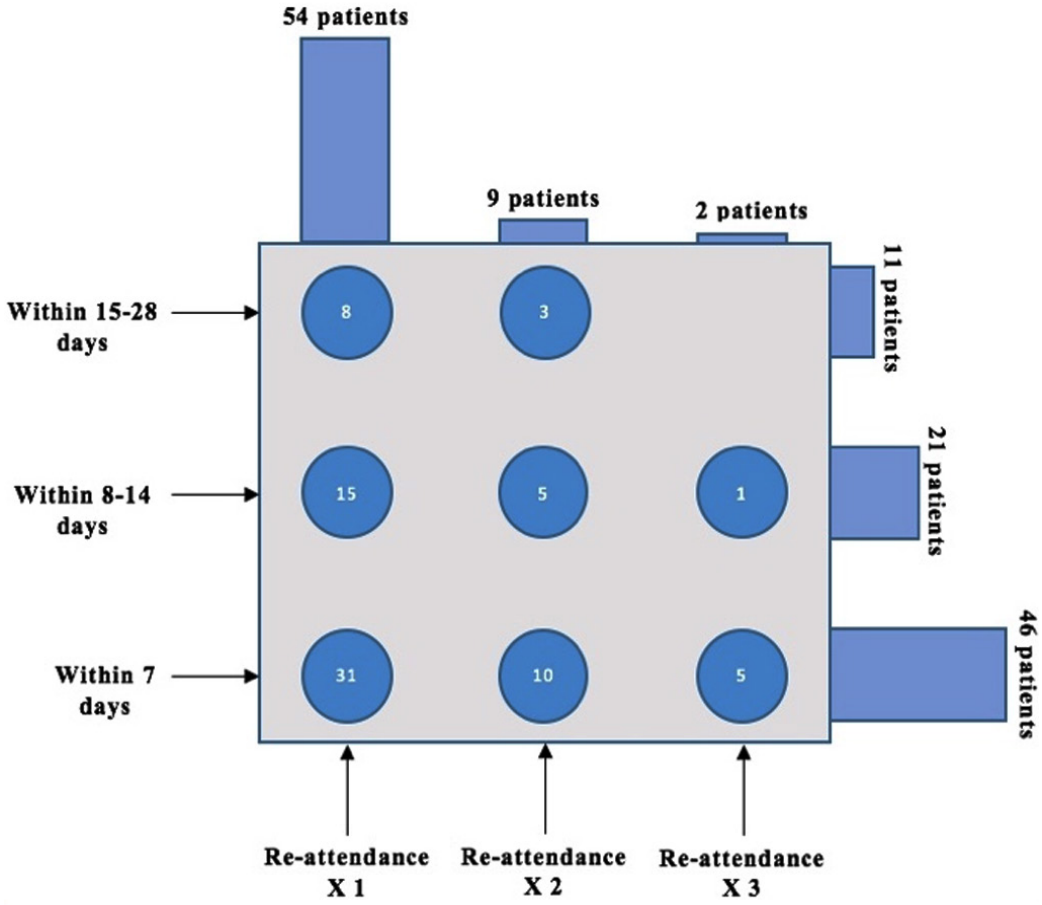

Fig. 1: Chart depicting frequency of re-attendances within 28 days (n=65). Bar charts have been added on the axes to reveal the number of patients who re-attended (x-axis) and the total number of re-attendances in different time intervals (y-axis)

(Fig. 2). of the admitted patients, 6 (28.5%) died in the hospital and out of them, 5 had tested positive for COVID-19.[3] patients required intensive care management and one required mechanical ventilation.

DISCUSSION

The COVID-19 outbreak has had a huge impact on the majority of the NHS services. In order to free up enough capacity to deal with the initial peak of the pandemic, the NHS was forced to close down or significantly reduce many areas of non-COVID care during April, May and June 2020.[8] In the emergency departments across England, attendances had fallen significantly since the COVID-19 lockdown, which led to concerns that some people might be harmed by not accessing treatment. The Royal College of Emergency Medicine also came forward and said that the public should not be frightened of going to emergency departments after numbers showed that there were 89,584 attendances in the week after

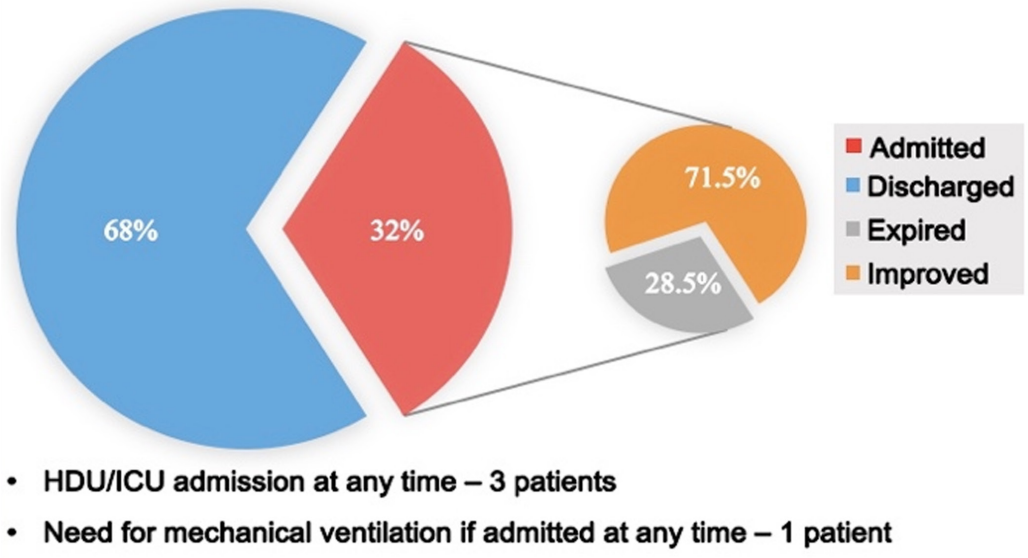

Fig. 2: Chart depicting outcome analysis among patients who re-attended within 28 days (n=65)

the lockdown (March 23-29, 2020), which was 25% down from the previous week. Only pneumonia cases had increased in the week since the lockdown began. For all other major presentations, including cardiac, myocardial ischemia, and gastrointestinal conditions, the numbers went down.[9]

The re-attendance of patients to emergency departments has always been a less studied subject even though it is a very common problem.[10] Data from different emergency departments suggests that although patients with known or suspected COVID-19 required hospital admission, the majority were discharged home.[11] There have been efforts put in to develop prediction models to look into the occurrence of critical illness in hospitalized patients with COVID-19.[12] Our literature search did not find any such model for predicting re-attendances during the same period. Kilaru AS *et al.* found that approximately 5% of the patients with COVID-19 discharged from the ED returned for an unscheduled hospital admission within 72 hours within a multihospital health system spanning 5 ED's in the US.[13]

Our study clearly shows the high number of re-attendances (21%) during the peak of COVID-19 pandemic in the UK. People belonging to the middle age group (41-50 years) and mostly females were the ones re-attending the most. The most common symptoms noted were shortness of breath, cough and fever and a large proportion suffered from bronchial asthma. One reason for the large number of patients and re-attendances being noted could be the closure of GP practices during the early phase of the pandemic. GPs were seeing just seven in every 100 patients face-to-face because of the corona virus outbreak, following a "remarkable" shift to online and telephone appointments across England.[14] The majority of the patients re-attended within 7 days and that too only once mostly.

There are multiple studies which focus upon the impact of COVID-19 pandemic on emergency department attendances but only few which looked upon the re-attendances during the same time period.[15,16,17] Daunt A *et al.* analyzed re-attendance data of patients with COVID-19 hospitalization admitted between March 1 and April 5, 2020 from three tertiary hospitals in London and found a re-attendance rate of 23% to the emergency department which is similar to our observation.[17]

This study is limited by the single centre and cross-sectional design. Subsequent studies should analyse large hospital network systems or national databases, and should include several months following COVID-19.

CONCLUSIONS

This study highlights that ED re-attendances were significantly high during the COVID-19 pandemic compared to the national average from previous years. This could be a reflection of people's inability to access primary health facilities due to the lockdown and other measures. Further studies are required to find other possible explanations for this trend. We may also need to re-examine our current practice methods and devise a uniform discharge package of care to minimize re-attendances.

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