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Research Article

Hospital Emergency Department (ED) Utilization in 2020 Was Well Below Pre-COVID (2019) Levels: Will This Trend Continue and What Are The Long-Term Implications for Hospitals and ED Physicians?

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Background

The COVID-19 pandemic has dramatically impacted utilization of health care services in the US. Previous studies [1], of the early months of the pandemic reported sudden and substantial reductions in hospital inpatient admissions and outpatient visits, including Emergency Department (ED) visits, compared to pre-COVID levels. More recent studies [2], reported that health care utilization began to rebound, with volume trends approaching pre-COVID levels. This paper summarizes data on the effects of the COVID-19 pandemic on hospital ED utilization for the entire year 2020. The data show that hospital utilization fell dramatically in the second quarter of 2020 and, despite increasing from this low point, remained well below pre-COVID levels for the remainder of the year.

Data and Methods

Unique daily hospital registration data to measure emergency department visits on a real-time basis from more than 500 hospitals in eight states (California, Massachusetts, New Mexico, Oregon, Virginia, West Virginia, Idaho and Washington) covering the period January 1, 2019 through December 31, 2020 is analyzed. Total ED visits are calculated on a 7-day rolling average for each day. The 2020 values are then compared on a percentage basis to the same date in the prior year (2019, pre-COVID baseline). The data for this analysis were supplied by Collective Medical [3], a care coordination software company that links to hospital operations and electronic medical records systems to gather data on a daily basis and covers between 40% to almost 100% of the hospital ED visits in each state.

ED Visits

Hospital ED visit volume (Exhibit 1) began falling rapidly in early March 2020 and bottomed out in early May at -47% below pre-COVID levels. EDs then began regaining volume from early May until mid-July, where it stabilized in the range of -18% to -21% below pre-COVID levels. However, beginning in mid-December, ED visit volumes began dropping again, falling to -30% below pre-COVID levels by December 31, 2020, and averaged -25% below pre-COVID levels for the month of December 2020.

To provide context, the CDC estimates [4], approximately 140 million total hospital ED visits per year in the US or about 11.6 million ED visits per month pre-COVID. We estimate the total reduction in ED visits for the entire year 2020 is -19% compared to the same period in 2019. This translates to 26.6 million fewer hospital ED visits nationally in 2020 compared to 2019. While overall ED volume for 2020 was -19% (below) 2019 levels, it was actually -24% (below) pre-COVID levels for the period March – December 2020, which equates to 33.6 million fewer ED visits.

Discussion

There are two sets of trends of importance. First, in the short run, the apparent recovery from the sudden initial decline ED visit volume earlier in the pandemic has stalled and reversed. While we are unable to pinpoint the reasons for the recent declines, it is likely tied to the end of year surge in COVID cases and COVID related admissions. Previous research has indicated that patients are more likely to avoid going to the hospital when community spread is increasing due to safety concerns. There have also been reports of hospital decisions to limit admissions for elective and non-urgent surgery to free up capacity for COVID patients. It is also possible, that in some "hot spots", hospitals have limited admissions due to strains on adequate staffing and treatment resources, reducing their effective capacity below licensed capacity. ED visit volume may begin to trend upwards as patients feel safer going to EDs after there is widespread vaccination in their communities.

Second, the substantial, sustained reduction in ED utilization from pre-COVID levels raises questions for health care managers and researchers regarding long-term ED utilization patterns and consumer and provider behavior, once the pandemic



is over. For example, to what extent did ED consumers switch to alternative sources for their care during the pandemic and, if so, will they continue to use these alternative sources as substitutes on a more permanent basis. A number of studies have documented the rapid and substantial increase in telehealth visits during the pandemic. One study [5], reported that telehealth outpatient-visit volumes comprised 69% of total outpatient visits in April 2020 and, since then; levels have dropped to 21% of total visits. Though lower than the peak, less than 0.01% of outpatient visits were via telehealth before the pandemic. While this study could not identify how many telehealth visits were substitutes for ED visits, it does document the emergence of telehealth, a now widely accepted way for patients to access care, and some substitution is plausible.

An important future research question for ED planners and physicians is determining the degree to which consumers reduced their ED utilization for certain conditions (compared to their ED use prior to the pandemic), and, if so, will they continue this change in ED utilization behavior in the long run. While our data do not currently allow us to examine the make-up of the "missing ED visits", studies by researchers with access to alternative data sets provide clues. One study [6], reported that adult visit volumes declined less than child ED visits: Adult volumes were down 16% during the week of August 16, while child visit volumes were down 58%. A CDC study [7], reported that the largest declines in ED visits were concentrated within a small set of conditions: abdominal pain and other digestive or abdomen signs and symptoms (-66,456), musculoskeletal pain excluding low back pain (-52,150), essential hypertension (-45,184), nausea and vomiting (-38,536), other specified upper respiratory infections (-36,189), sprains and strains (-33,709), and superficial injuries (-30,918). Overall, studies with access to detailed patient characteristics generally report that ED volume reductions were for less serious medical conditions and for younger patients.

Conclusions

Overall, our data show a substantial negative impact of the COVID-19 pandemic on hospital ED visit volume for 2020 and more volatile trends than had been hoped for, when it appeared by late summer and fall that the worst might be over and that hospital utilization would normalize. These data for all of 2020 highlight the importance of closely monitoring health system utilization and capacity trends so that administrators, health planners, and policy makers can develop operational plans and support policies to quickly

respond to changing conditions as the nation continues to confront the COVID-19 pandemic and future unexpected surges in demand for emergency services. In addition, the sustained reduction in ED utilization highlights the need for further research on both the potential negative health effects of patients not seeking emergency services, and whether changes in ED utilization patterns and behavior as a result of COVID-19 might be permanent, and if so, the implications for hospital emergency department planners and managers as well as emergency physicians.

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Exhibit 1:

