

Changes in Hospital Admissions for Urgent Conditions During COVID-19 Pandemic

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Patients may be avoiding medical facilities during the coronavirus disease 2019 (COVID-19) pandemic.^{1,2} Whether patients are deferring needed care for urgent conditions and to what extent are unknown. We compared admission rates for acute medical conditions during the COVID-19 pandemic with a reference year.

METHODS

We used billing data from 8 acute care hospitals within a major integrated health system. We selected medical conditions for which incidence should not be affected by COVID-19. We identified 9 principal diagnoses from *International Classification of Diseases, Tenth Revision* codes across 4 specialties: cardiovascular disease (ST-segment elevation myocardial infarction [STEMI], aortic dissection), neurology (cerebrovascular accident, seizure), gastroenterology (appendicitis, cholecystitis, pancreatitis, gastrointestinal bleed), and urology (urolithiasis). In addition, we defined a combined obstetrical falsification end point (ectopic pregnancies, miscarriages, vaginal deliveries, and cesarean sections).

We compared daily admission rates during the pandemic period (3/1/2020-4/30/2020) with the same dates in 2019 (3/1/2019-4/30/2019). As a reference, we also compared a prepandemic period in the same years (1/1/2019-2/28/2019 and 1/1/2020-2/29/2020). We compared admission rates between years using *t* tests. We also describe basic demographic data for both 2019 and 2020. This project was undertaken as a Quality Improvement Initiative at Mass General Brigham and as such was not formally supervised by the Institutional Review Board per its policies.

RESULTS

There were 3219 admissions for the conditions of interest during the study period in 2019 and 2661 in 2020. In 2020, patients were 73.4% white, 53.4% male, and 86.8% English speaking, and 60.0% were older than 60 years; 41.5% were Medicare beneficiaries. There was no difference in prepandemic daily admission rates in 2020 compared with 2019 (29.04 vs 27.63 admissions per day; -4.9% ; $P = .50$) (Table).

ABSTRACT

OBJECTIVES: To determine whether patients are deferring necessary care for urgent conditions during the coronavirus disease 2019 (COVID-19) pandemic and, if so, to what extent.

STUDY DESIGN: Cross-sectional study.

METHODS: Using billing data from 8 acute care hospitals, we identified 9 principal medical diagnoses from *International Classification of Diseases, Tenth Revision* codes across 4 medical specialties (cardiology, gastroenterology, neurology, and urology). In addition, we defined a combined obstetrical falsification end point. We compared daily admission rates during the pandemic period [3/1/2020-4/30/2020] with the same dates in 2019 [3/1/2019-4/30/2019]. As a reference, we also compared a prepandemic period in the same years [1/1/2019-2/28/2019 and 1/1/2020-2/29/2020]. We compared admission rates between years using *t* tests.

RESULTS: There were 3219 admissions for the conditions of interest during the study period in 2019 and 2661 in 2020. There was no difference in prepandemic daily admission rates in 2020 compared with 2019 (29.04 vs 27.63 admissions per day; -4.9% ; $P = .50$). During the pandemic period, there was a 33.7% decrease in admission rates for all conditions combined in 2020 compared with 2019 (24.68 vs 16.37; -33.7% ; $P = .03$). By specialty, the combined gastroenterology (10.22 vs 7.20; -29.6% ; $P = .02$) and cardiovascular (2.34 vs 1.29; -44.7% ; $P = .05$) end points demonstrated reduction in daily admission rates.

CONCLUSIONS: Daily admission rates during the COVID-19 pandemic were lower for these acute medical conditions. Public awareness campaigns are urgently needed to reassure the public about the safety of presenting for care.

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During the pandemic period, there was a 33.7% decrease in admission rates for all conditions combined in 2020 compared with 2019 (24.68 vs 16.37; -33.7% ; $P=.03$). By specialty, the combined gastroenterology (10.22 vs 7.20; -29.6% ; $P=.02$) and cardiovascular (2.34 vs 1.29; -44.7% ; $P=.05$) end points showed reduction in daily admission rates. In condition-specific analyses, cholecystitis (3.44 vs 2.10; -38.9% ; $P=.06$), gastrointestinal bleed (3.35 vs 2.37; -29.2% ; $P=.08$), and aortic dissection (1.36 vs 0.54; -60.3% ; $P=.12$) showed a trend toward difference. There was no difference in admission volume for the falsification end point (48.3 vs 45.6; -5.5% ; $P=.81$).

DISCUSSION

Daily admission rates during the COVID-19 pandemic were lower for these acute medical conditions. Although combined specialty end points exhibited a decrease in daily admissions, the individual conditions were likely underpowered to identify similar changes. STEMI had an effect estimate similar in magnitude to that found in previous studies, and other conditions demonstrated a trend toward difference.^{1,3}

The observational design limits our ability to draw causal conclusions. One explanation for these findings is that patients are fearful of engaging with medical facilities during the pandemic. Alternatively, changes in emergency department practices may result in fewer admissions or in admissions under different primary diagnosis codes related to COVID-19.

CONCLUSIONS

Because a change in incidence is unlikely for these conditions on clinical grounds, these results raise the possibility that patients are not presenting for necessary care. Public awareness campaigns are urgently needed to reassure the public about the safety of presenting for care. ■

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TABLE. Changes in Daily Admission Rates During Prepandemic and COVID-19 Pandemic Periods Compared With Same Dates in 2019

| Specialty | January and February 2019 vs 2020 | | March and April 2019 vs 2020 | |
|--------------------------------|--------------------------------------|------------|------------------------------------|------------|
| | (% change in daily admission rate) | P | (% change in daily admission rate) | P |
| Cardiovascular | -14.3% | .44 | -44.7% | .05 |
| Aortic dissection | -7.3% | .36 | -60.3% | .12 |
| STEMI | -21.7% | .87 | -23.0% | .28 |
| Gastroenterology | +6.6% | .90 | -29.6% | .02 |
| Acute pancreatitis | +27.4% | .91 | -17.4% | .82 |
| Appendicitis | -8.3% | .72 | -26.9% | .52 |
| Cholecystitis | +3.9% | .96 | -38.9% | .06 |
| GI bleed | +2.9% | .92 | -29.2% | .08 |
| Neurology | -12.1% | .48 | -34.6% | .41 |
| CVA | -11.7% | .73 | -29.1% | .53 |
| Seizure | -15.6% | .29 | -52.7% | .20 |
| Urology | - | - | - | - |
| Urolithiasis | -19.1% | .54 | -42.2% | .28 |
| All conditions | -4.8% | .50 | -33.7% | .03 |
| Falsification end point | | | | |
| Obstetrics | +8.5% | .67 | -5.5% | .81 |

COVID-19, coronavirus disease 2019; CVA, cerebrovascular accident; GI, gastrointestinal; STEMI, ST-segment elevation myocardial infarction.

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