CHART
Center for Health Analytics, Research & Transformation at NJHA

BULLETIN

Despite COVID, Top Reasons for Seeking Hospital Care Remain Stable – With a Few Surprising Trends

Despite all the volatility of COVID-19 and the suspension of elective procedures, the top reasons that New Jerseyans come to the hospital or the emergency department remained surprisingly consistent throughout 2020 when compared to the prior year. However, a few new trends are emerging – including increases in bariatric surgery.

Top Reasons that N.J. Residents Come to the Hospital

When removing COVID-19 cases and maternity cases, the top inpatient conditions in 2019 represented roughly the same proportion of total patients in 2020. These frequent diagnoses included psychoses, septicemia, hip or knee replacement, heart failure and shock, and digestive disorders such as esophagitis and gastroenteritis. The top non-COVID diagnoses sending people to the ED included chest pain, acute upper respiratory infection, abdominal pain, headache, and urinary tract infections.

The following table presents the top 25 non-COVID diagnoses in both the inpatient and emergency department setting, based on CHART's review of the patient-level claims in calendar year 2019:

TOP 25 NON-COVID-19 SERVICES AT N.J. HOSPITALS IN 2019

Inpatient			Emergency Department		
Rank	DRG	MS-DRG Description	Rank	Diagnosis	ICD-10 Diagnosis Code Description
1	885	Psychoses	1	R079	Chest Pain, Unspec
2	871	Septicemia Or Sev Sepsis w/o Mv >96 Hrs w MCC	2	J069	Acute Upper Resp Infct, Unspec
3	470	Major Hip-Knee Jnt Rplcmt Or Reattach Of LE w/o MCC	3	R0789	Other Chest Pain
4	291	Heart Fail And Shock w MCC	4	R109	Unspec Abdominal Pain
5	392	Esoph, Gastroent And Misc Digest Disord w/o MCC	5	R51/R519	Headache
6	897	Alcohol, Drug Abuse Or Depend w/o Rehab w/o MCC	6	N390	UTI, Unspec
7	872	Septicemia Or Sev Sepsis w/o Mv >96 Hrs w/o MCC	7	M545	Low Back Pain
8	603	Cellulitis w/o MCC	8	S0990XA	Unspec Injury Of Head, Intl Enctr
9	621	O.R. Proc For Obesity w/o CC/MCC	9	R42	Dizziness And Giddiness
10	690	Kidney And UTI w/o MCC	10	B349	Viral Infct, Unspec
11	378	GI Hemore w CC	11	R55	Syncope And Collapse
12	101	Seizures w/o MCC	12	K529	Noninfct Gastroent And Colitis, Unspec
13	194	Simple Pneumonia And Pleurisy w CC	13	J029	Acute Pharyngitis, Unspec
14	683	Renal Fail w CC	14	R509	Fever, Unspec
15	193	Simple Pneum And Pleurisy w MCC	15	I10	Essential Hypertension
16	65	Intracranial Hemor Or Crbl Infarc w CC Or TPA In 24H	16	F10129	Alcohol Abuse w Intoxication, Unspec
17	189	Pulm Edema And Resp Fail	17	K5900	Constipation, Unspec
18	190	Chronic Obstr Pulm Disease w MCC	18	R112	Nausea w Vomiting, Unspec
19	247	Percut Cardiovasc Proc w Drug-Eluting Stent w/o MCC	19	J45909	Unspec Asthma w (Acute) Exacerbation
20	202	Bronchitis And Asthma w CC/MCC	20	R05	Cough
21	641	Misc Disord Of Nutr, Mtblsm, Fluids And Elytes w/o MCC	21	R1013	Epigastric Pain
22	812	Red Blood Cell Disord w/o MCC	22	R1110	Vomiting, Unspec
23	638	Diabetes w CC	23	S161XXA	Strn Of Muscle, Fascia And Tendon At Neck, Intl Enctr
24	280	AMI, Discharged Alive w MCC	24	S0101XA	Lcrtn w/o Fgn Body Of Otr Part Of Hd, Intl Enctr
25	853	Infct And Parasitic Diseases w O.R. Proc w MCC	25	R002	Palpitations

When looking at the raw number of non-COVID, non-maternity inpatient discharges across all hospitals, volumes in 2020 were 18.3 percent less than in 2019. This translates into 135,850 fewer non-COVID, non-maternity discharges in 2020. By comparison, inpatient volume in 2020 for all conditions – including the 63,937 patients hospitalized with COVID-19 – was down 8.3 percent versus 2019.

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Thus, even after accounting for the influx of "new" COVID-19 cases (nearly 64,000) in 2020, overall hospital discharges in New Jersey were still well below prior year levels, with non-COVID activity in particular down significantly more.

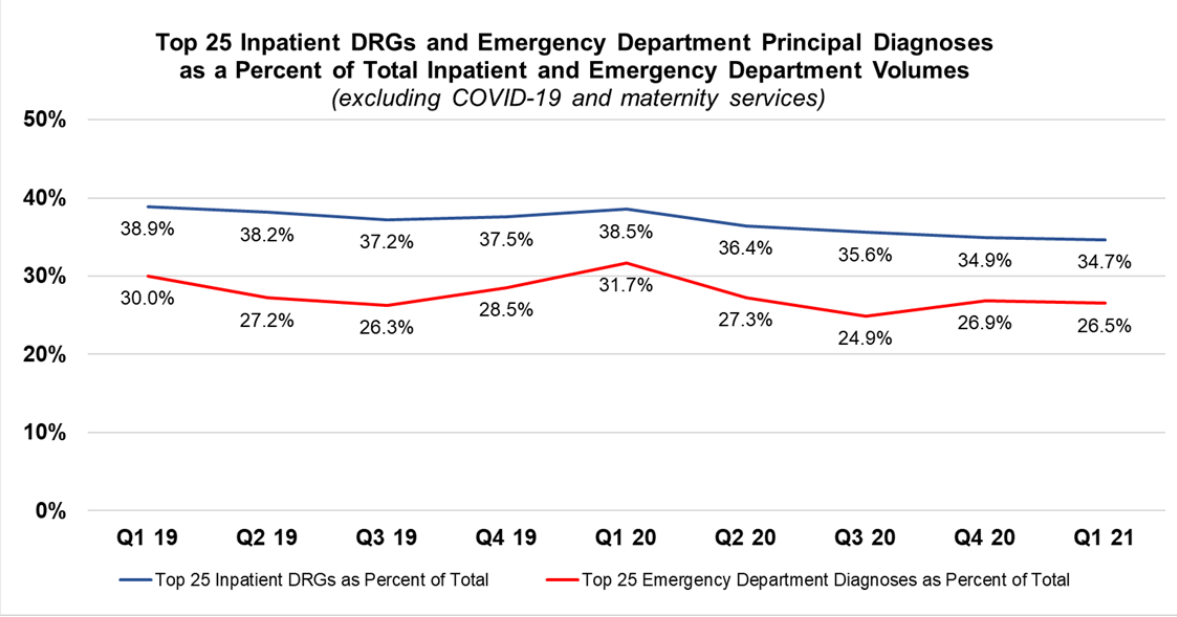
Fewer Hospital Visits in 2020, But Similar Conditions Being Treated

Throughout all of 2019, the 25 non-COVID diagnosis-related groups (DRGs) with the highest number of discharges comprised 38 percent of all discharges. This proportion remained relatively consistent from quarter to quarter in 2019, ranging from 37 percent to 39 percent. The trend continued in early 2020, with the top 25 DRGs comprising 39 percent of total discharges in quarter one (January – March) of 2020.

The second quarter (April – June) of 2020 was the peak of COVID-19 hospitalizations in New Jersey, and many individuals deferred medical care as stay-at-home protocols were rolled out. The governor also issued an executive order that prohibited elective surgeries and procedures from being performed except in life-threatening situations. As a result, hospital activity declined significantly beginning in March and into June. Inpatient discharges in the second quarter of 2020 were 40 percent less than the average quarterly discharges during 2019.

When looking at emergency department visits, the top 25 most common reasons for non-COVID ED visits (or principal diagnoses) throughout 2019 represented a consistent proportion of total ED activity as well, both before and during the pandemic (despite a 30 percent drop in overall visits). With moderately more variation than the inpatient trend, the percentage of all ED activity comprised of the top 25 principal diagnoses (based on statewide activity in calendar year 2019) remained relatively stable throughout 2019, 2020 and early 2021, ranging from a low of 25 percent to a high of nearly 32 percent.

The graph below shows the percentage of total non-COVID inpatients and ED visits represented by these top 25 conditions, by quarter, from 2019 through early 2021.



Exploring 'COVID-like' Codes: Early Warning Signs?

While New Jersey hospitals have seen fewer patients overall in 2020, the most common reasons for patients coming to the hospital remained relatively stable. Despite this general consistency, there were some quarterly fluctuations in the share of patients represented by certain individual DRGs and primary diagnoses in 2020 compared to 2019. Some of these fluctuations may be attributable to the early days of the pandemic, despite efforts to remove COVID-19 activity from this analysis.

The proportion of inpatients with simple pneumonia and pleurisy, chronic obstructive pulmonary disease, and bronchitis and asthma increased in quarter one of 2020, while having decreased in the two subsequent quarters. The proportion of emergency department patients with acute upper respiratory infection, viral infection, acute pharyngitis, fever, cough, and vomiting followed a similar pattern as well. These are conditions with symptoms consistent with coronavirus. After having increased by over 85 percent from 2019 to quarter one of 2020 (20.9 per 1,000 versus 39.2 per 1,000), the proportion of those with a principal diagnosis for unspecified acute upper respiratory infection was still down over 50 percent in quarter four of 2020 (9.9 per 1,000) compared to 2019.

The World Health Organization (WHO) and the U.S. Centers for Disease Control (CDC) began discussing the creation of a dedicated ICD-10 code for the as-yet unnamed novel coronavirus as early as January 2020. However, it wasn't until April 1, 2020, that healthcare providers were required to use the new diagnosis code to identify COVID-19 patients (an unprecedented off-cycle update to the standard Oct. 1 date for new diagnosis codes). As a result, quarter one likely included patients who were perhaps ill with the coronavirus but did not yet have this COVID-19 diagnosis code as their hospital visit occurred prior to April 1 – driving the proportions up. When looking at the raw numbers, this seems likely, as unspecified viral and upper respiratory infections increased 126 percent and 67 percent, respectively. To control for seasonal variation, the number of visits coded with these two diagnoses were compared to the same quarter in 2019, with similar results (increases of 73 percent and 82 percent, respectively). The subsequent declines were likely due to the exclusion of COVID-19 patients as well as the result of improved hygiene, mask mandates and social distancing measures.

The significant decrease in diagnoses for bronchitis and asthma may also likely be attributable to the decline in younger ED patients, as asthma is more common among children, adolescents and young adults.

Select Top-25 Conditions: Some Initial Observations

- *Two Common Inpatient Elective Procedures* – The proportion of two common inpatient procedures typically (though not always) considered "electives" – major hip and knee joint replacement, and operating room (O.R.) procedures for obesity – declined in quarters one and two of 2020, while increasing in quarters three and four. Joint replacements still had not reached their 2019 level by the fourth quarter of 2020. However, one area that did see a significant increase by proportion was O.R. procedures for obesity, which were higher at the end of 2020 compared to previous quarters of 2020 and 2019. This trend is not unique to New Jersey. Yale New Haven Health in Connecticut experienced a 20 percent increase in bariatric surgery volume at their five hospitals once electives resumed in June. After obesity has been shown to be a risk factor to COVID-19 infections and severe outcomes, more and more people have been scheduling surgeries. The Optum chain of surgical centers, for example, has reported a 26 percent annual increase in patients opting for bariatric surgery programs over the summer.

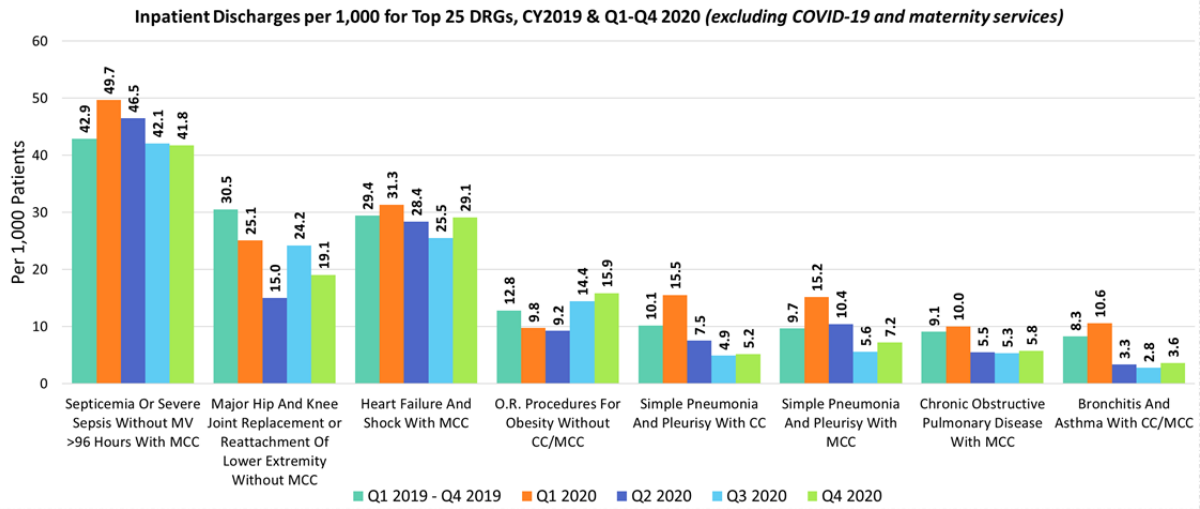
- *Heart-Related Conditions and Symptoms* – The proportion of ED patients with a principal diagnosis for chest pain was higher from April through December 2020. The same pattern holds true for those with a diagnosis of palpitations. This may indicate that individuals who did go to the emergency department – even during a period of hospital avoidance – were still concerned about heart-related issues. When looking at the inpatient population, the proportion of those with a DRG for heart failure and shock decreased in quarters two and three of 2020 compared to 2019. Those with such illnesses may have been more likely to have had COVID-19 and were therefore excluded from this patient population. However, a deeper dive into the secondary diagnoses of COVID-19 patients was not performed for this analysis.

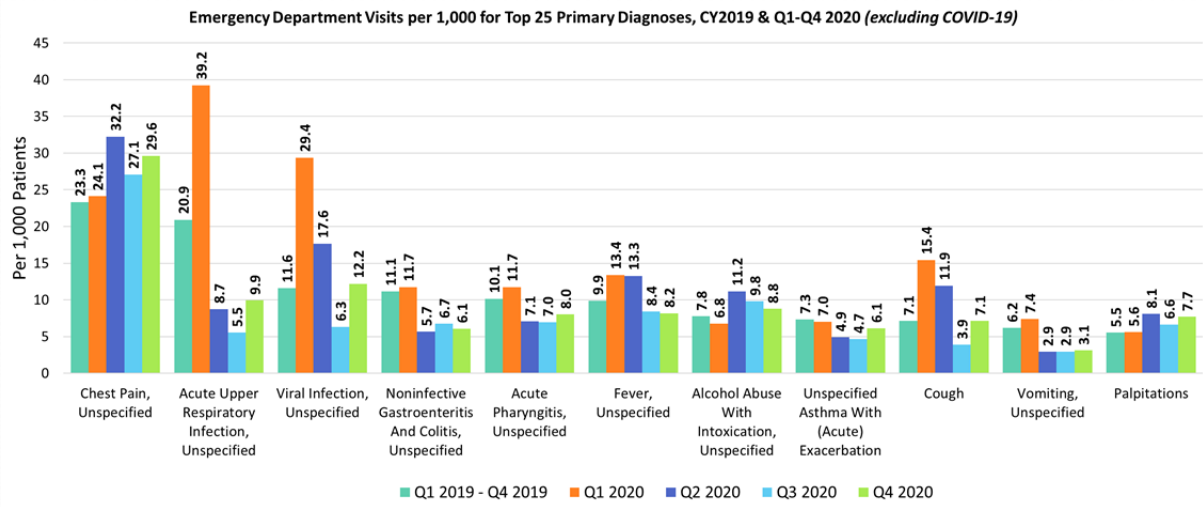
- *Emergency Department Visits Related to Alcohol Abuse* – One particularly problematic finding was the uptick in the proportion of emergency department patients presenting with a principal diagnosis for alcohol abuse with intoxication from April through December 2020. After having spiked in quarter two of 2020 (11.2 per 1,000 patients), this proportion was still higher in quarter

three of 2020 (8.8 per 1,000 patients) compared to 2019 (7.8 per 1,000 patients). While this cannot be contributed solely to COVID-19, alcohol abuse was still a major concern among those who visited the ED in 2020.

- *ED Visits for Stomach Pains* – The proportion of ED patients with a primary diagnosis for noninfective gastroenteritis and colitis in quarter four of 2020 is still at almost half the level it was in 2019. While it cannot be said with complete certainly, individuals may still be avoiding the emergency department for common stomach illnesses and symptoms.

The inpatient DRGs and ED diagnoses discussed above are summarized in the next two charts.





Despite some slight fluctuation, the proportions for the majority of other DRGs and principal diagnoses remained relatively close to 2019 levels throughout 2020.

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Slow Rebound

While the same 25 principal diagnosis codes and 25 DRGs represented a similar proportion of all non-COVID emergency department patients and (non-maternity) inpatients throughout 2019 and in 2020, there was a clear drop in overall volume in quarter two of 2020 that coincided with the peak of COVID-19 activity in New Jersey hospitals. The majority of the top diagnoses and DRGs experienced slight increases in volumes in the summer months following June 2020. Overall patient volumes, however, remained lower at year-end 2020 compared to year-end 2019, and the "bounce back" to historical levels is not yet in sight. Despite this, the rebound in patient encounters has been more rapid for some of the conditions examined in this analysis. To date, this is most evident in hip and knee replacements and operating room procedures for obesity on the inpatient side, and in diagnoses related to chest pain and alcohol abuse in the emergency department.

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