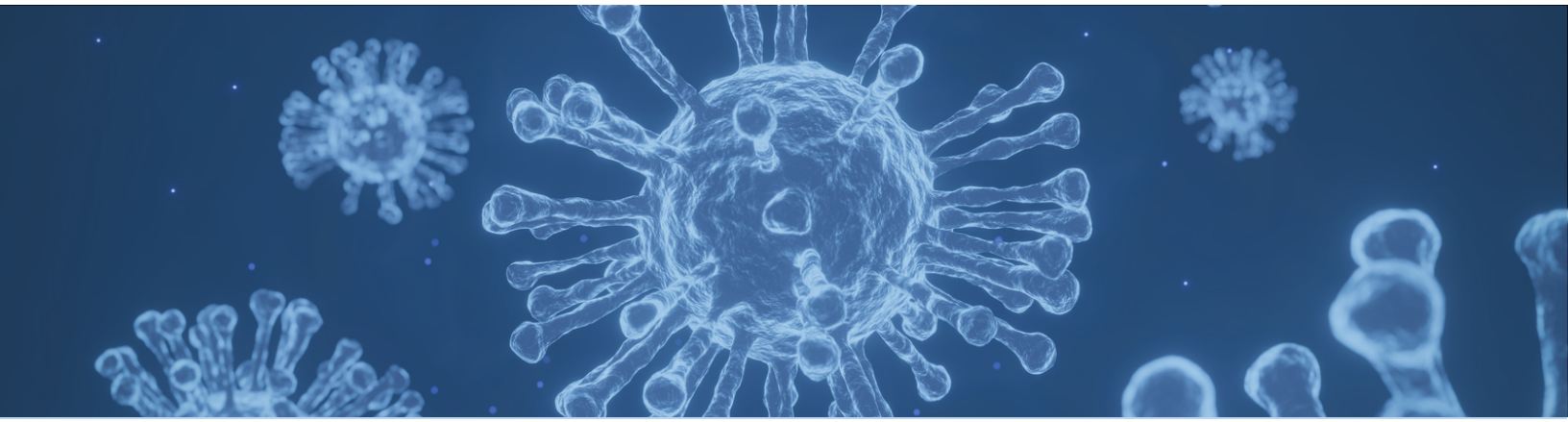
TriageLogic

Nurse Triage: Patient Phone Calls About COVID-19



Executive Summary

- We conducted a study using data on patient phone calls from our nurse triage call center during the COVID-19 pandemic.

- We find that throughout the pandemic, the number of calls we received about COVID-related concerns mirrored surges in the total number of cases in the United States.

- At the beginning of the pandemic in March 2020, we see a relatively high number of calls about COVID-19 exposure compared to the total number of COVID cases in the United States.

- As the pandemic continued, patients who called about COVID were more likely than average to need a follow-up with their doctor, but less likely to need urgent medical attention. Our results point to increasing patient education throughout the pandemic.

- COVID-19 may have also changed the way patients sought care for other conditions. We find a correlation between rates of anxiety calls and increases in the number of people who underestimated the severity of their symptoms. We suggest that these patients may have avoided or delayed seeking medical care for fear of catching COVID.

- Nurse triage was a helpful and efficient way to direct patients to the appropriate level of care during the COVID-19 pandemic. Most patients who called the nurse triage service about COVID were not seriously ill and they tended to seek information about the severity of their symptoms. Nurse triage allowed sick patients to speak to a medical professional without having to visit a doctor in person.

- Triage nurses were also able to identify the 21% of patients who underestimated the severity of their symptoms, and direct them to seek urgent medical treatment.

- Telephone nurse triage provides a safe and effective way to direct patients to the appropriate level of care, saving lives and reducing the burden on healthcare systems during the COVID pandemic.

Introduction

The COVID-19 pandemic has increased the need for telemedicine as patients and doctors try to stop the spread of infection with remote visits. The CDC reports that telemedicine visits increased by more than 50% during the first months of the pandemic. Triage nurses can work closely with providers to decrease the burden on healthcare usage by providing a safe and effective way to direct patients to the appropriate level of care. Using a set of standardized protocols, telephone triage nurses assess patient symptoms and determine which ones are most serious and may need immediate medical attention. Protocols allow triage nurses to evaluate callers, determine which patients are at risk and need a doctor, and provide consistent care to patients. Nurses also send triage notes to the patients' doctors, enabling the doctors to provide continuity of care for their patients by reviewing the notes and following up with patients if necessary.

However, even as the number of telemedicine visits has increased, patients have become more reluctant to visit doctors and hospitals for fear of contracting COVID. The CDC estimates that more than 40% of U.S. adults delayed seeking care in the months of March and April 2020, including 12% who were considering seeking urgent care. Our triage nurse centers observed a similar issue, with more than 20% of patients underestimating their symptoms when they needed emergency care.

We collected data from our nurse triage call centers and studied how patient behavior and use of telephone nurse triage services may have been affected by the COVID-19 pandemic. We studied about 230,000 calls from our call centers over a period of 10 months from January 2020 through October 2020. About 195,000 calls took place after mid-March, during the COVID-19 pandemic. Each data entry in our study represents a patient call. Each entry contains information about the patient's demographics, the patient's disposition, and the triage protocol. In addition, we identified patients who called specifically with COVID-related concerns. The results of our study provide insights into how telephone triage nurses can help provide high-quality remote care for patients.

1. Data Overview and Patient Demographics

The following figures present demographic information by gender and age for patients that called the nurse triage service in this 10 month time frame. The gender and age categories presented are consistent with previous studies. We compare demographics for all patients that called the nurse triage service against patients who called specifically about COVID-related concerns.

We find no significant difference in the gender of patients who called about COVID-19 versus those who simply called the nurse triage service. In both cases, over 55% of callers are women. This is consistent with past findings in data studies conducted by TriageLogic. Figure 1 presents patient genders for all patients and those who called about COVID.

Gender Breakdown of all Callers

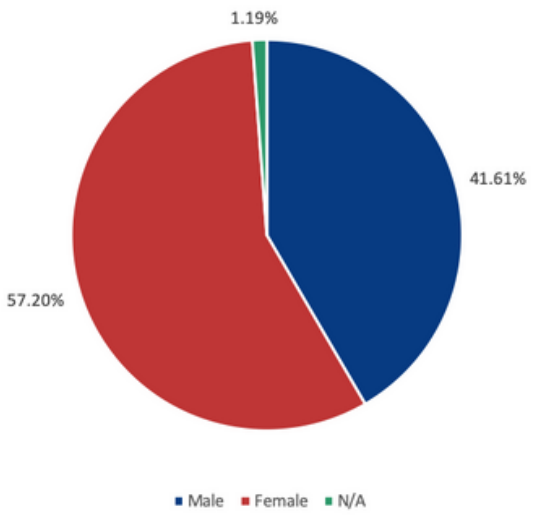


Figure 1A: *Gender breakdown of all callers who called the nurse triage service from January - October 2020.*

Gender Breakdown of all Patients who Called About COVID

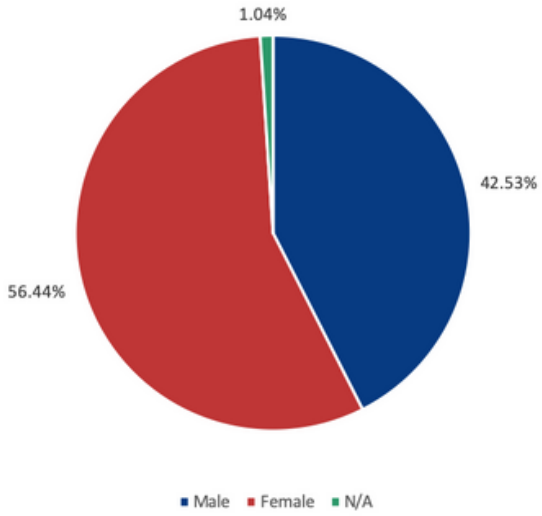


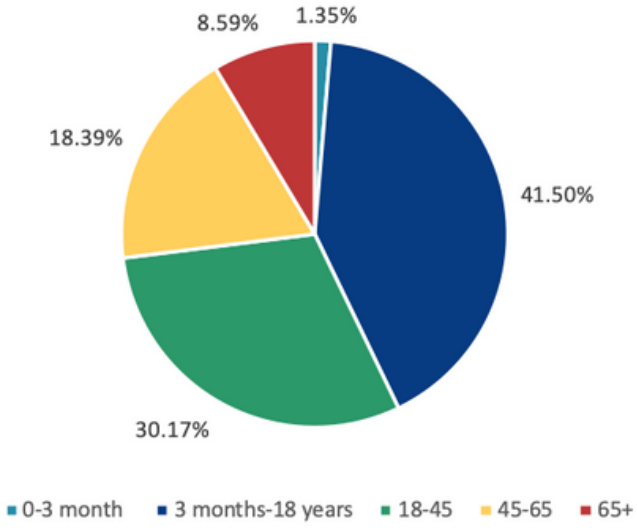
Figure 1B: *Gender breakdown of patients who called the nurse triage service and were triaged with a COVID-19 protocol from March-October 2020.*

We find a more significant difference in age demographics between COVID-related calls and all calls. Figure 2 provides a breakdown of calls by age. About 57% of calls about COVID came from adults compared to about 42% of total calls.

Patients ages 18-65 were about 1.5 times as likely to call about COVID-19 compared to usual. Somewhat surprisingly, patients in the 65+ age group, the most vulnerable to COVID, were less likely to call about the virus.

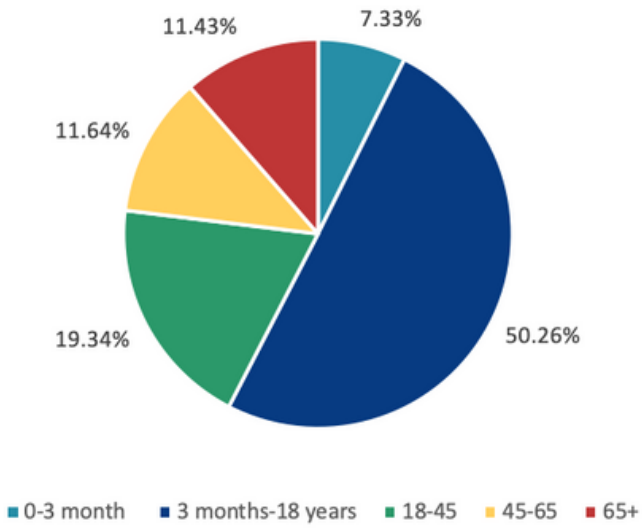
The rate of COVID-related calls from patients age 65+ was about 3% lower than the overall rate of calls from this age group. The difference may be explained by the fact that patients aged 65+ were more likely to experience serious symptoms and thus bypass the nurse triage system and seek direct medical care. This might also explain why received a higher percentage of calls from patients aged 18-65. Patients in these age categories may have been more likely to experience symptoms than children, and thus wanted to seek medical advice.

Age Breakdown of all Callers



2A: *Age breakdown of all callers who called the nurse triage service from January - October 2020.*

Age Breakdown of all Patients who Called About COVID



2B: *Gender breakdown of patients who called the nurse triage service and were triaged with a COVID protocol from March-October 2020.*

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2. How Many Patients Were Calling About COVID-19?

When a patient calls a nurse triage line, they are asked to describe their chief complaint to the triage nurse. Using the information provided by the patient, the nurse then chooses the protocol that aligns with the chief complaint and triages the patient appropriately. If patients called with a COVID-related symptom only, they were triaged using one of two protocols: COVID Exposure or COVID Diagnosed or Suspected. If the patient was experiencing other serious or potentially urgent medical symptoms consistent with a different condition, they may have been triaged under an alternate protocol, even if they told the nurse they were exposed to or diagnosed with COVID.

The descriptions are as follows:

COVID Exposure:

- Exposed (close contact) to a person who has been diagnosed (confirmed by testing) or suspected to have COVID-19.
- Patient has no common COVID-19 symptoms (i.e., cough, fever, shortness of breath, muscle aches).
- Questions about COVID-19.

COVID Diagnosed or Suspected

- Diagnosis was confirmed by positive lab test.
- Clinical diagnosis or suspected diagnosis was made by healthcare provider.
- Patient or caregiver suspects COVID-19 based on symptoms consistent with COVID-19 and recalls close contact with a person with COVID-19 in the past two weeks, or is living in an area of community spread.

In Figure 3 we look at COVID-related calls as a percentage of the total calls received by our call centers for the months in our study. We also break down the rates of COVID-related calls to study the number of patients calling about exposure versus those calling about diagnosis. Figure 4 presents data on the total number of daily confirmed COVID cases by day in the United States.

Percent of Total Calls to Nurse Triage Service About COVID per Month

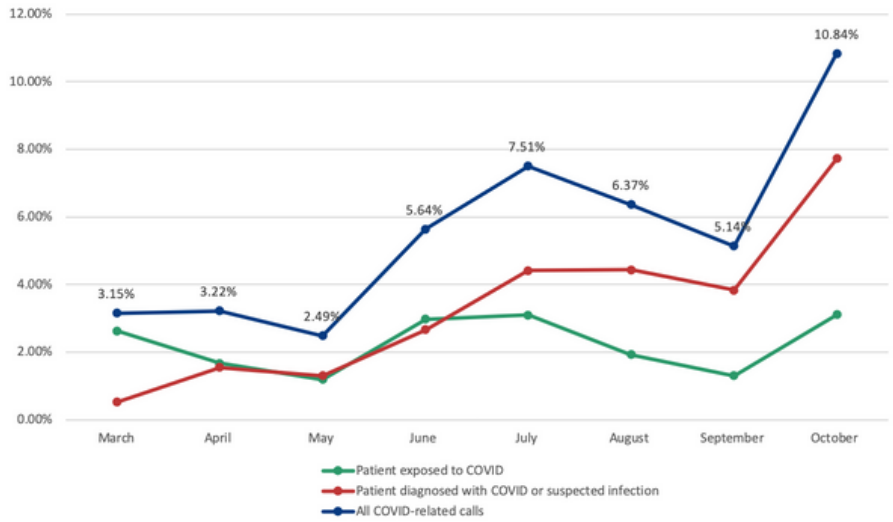

Figure 3: *COVID-related calls as a percentage of total calls by month. We provide the number of total COVID-related calls as well as a breakdown of total calls by diagnosed and exposed patients.*

Total Daily COVID Cases in the United States

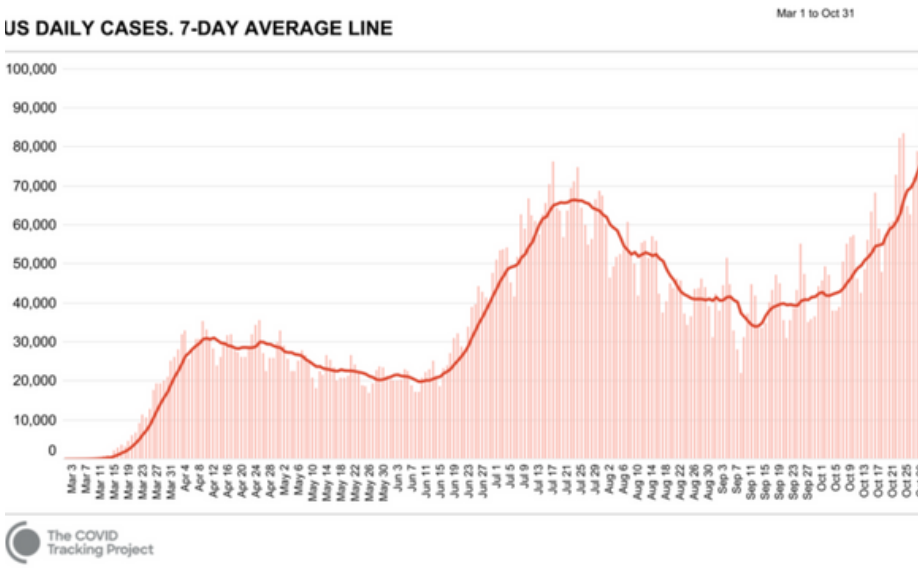

Figure 4: *Number of daily positive COVID-19 cases in the US.*
Source: *The COVID Tracking Project*

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We find that increases in the relative number of patients calling our nurse triage service about COVID closely mirror surges in the total number of cases in the United States. As COVID cases spiked, more patients began calling nurse triage. We note a relatively high number of COVID-related calls in March compared to the total number of cases.

In our analysis of COVID-diagnosed versus exposed callers in Figure 3, **we find that the number of calls about exposure remain relatively constant across the pandemic. However, the number of COVID diagnosed or suspected patients increased steadily throughout the pandemic. After April 2020, the majority of patients who called the nurse triage service were either already diagnosed with COVID-19 or suspected that they had contracted the virus.**

This may be largely due to widespread public knowledge about the symptoms of COVID. As the general population became more educated about the symptoms of COVID, they became better at identifying whether or not they had the virus and only called the triage nurse if they were concerned about their symptoms. This may also explain why there was a higher rate of calls about potential COVID exposure at the beginning of the pandemic, when patients had less knowledge about the virus. Patients may have been more likely to call the triage nurse in order to determine if they had the virus rather than only calling when they had specific questions about the severity of their symptoms.

3. Were COVID callers sicker than the average patient?

Next, we look at the caller dispositions given by the nurses. *In this part of our study, we only look at adult callers since they are much more likely than children to experience serious symptoms.* There are five main categories of patient dispositions, which indicate the level of care that patients are assigned to by the triage nurse. The main categories of dispositions are as follows:

911 Dispositions – The triage nurse told the patient to call 911 immediately. In cases where the triage nurse instructed the patient to call 911, the patient was not asked to answer the survey question.

Urgent – Patients were told to go to an Emergency Department, call their physician immediately, or seek other emergency medical care.

See Doctor in 24 to 72 hours **-** Patients are generally told to call their Primary Care Physician when the office is open and see the PCP within 24 hours – 3 days.

Homecare – Nurses advise patients on homecare. Nurses might encourage patients to call their PCP or see the PCP within two weeks.

Other –Includes calls where nurses instructed patients to call local agencies, ordered lab tests, etc. (generally less than 1% of all calls).

Of the 230,000 calls that we received over this time period, about 45% of the callers were assigned homecare with no further follow up required within 48 hours. About 30% were classified as “urgent,” meaning that the patient needed to go to an emergency department or contact their physician immediately. For more information on dispositions and patient demographics, please refer to our article Data on Nurse Triage During COVID-19. Figure 5 presents disposition information for all callers.

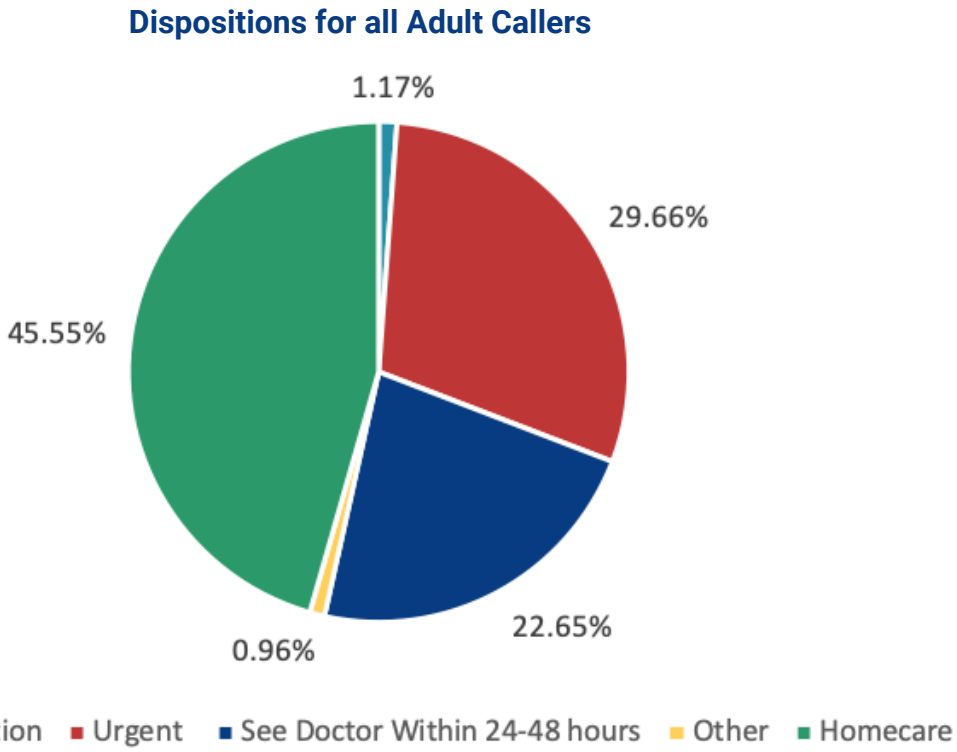

Figure 5: *Breakdown of disposition assigned by the triage nurse to all patients who called the triage service from January - October 2020.*

We compare dispositions for all callers in our sample (Figure 5) against dispositions for patients who called specifically about COVID-19 to determine if COVID-19 patients were sicker than the average patient who called the nurse triage line. In other words, were COVID-19 patients more likely to be assigned urgent dispositions? Did patients with COVID underestimate or overestimate the severity of their symptoms? Figure 6 presents the disposition results for patients calling about COVID-19, divided by those who were calling about exposure and those who were diagnosed with COVID or suspected they had contracted the virus.

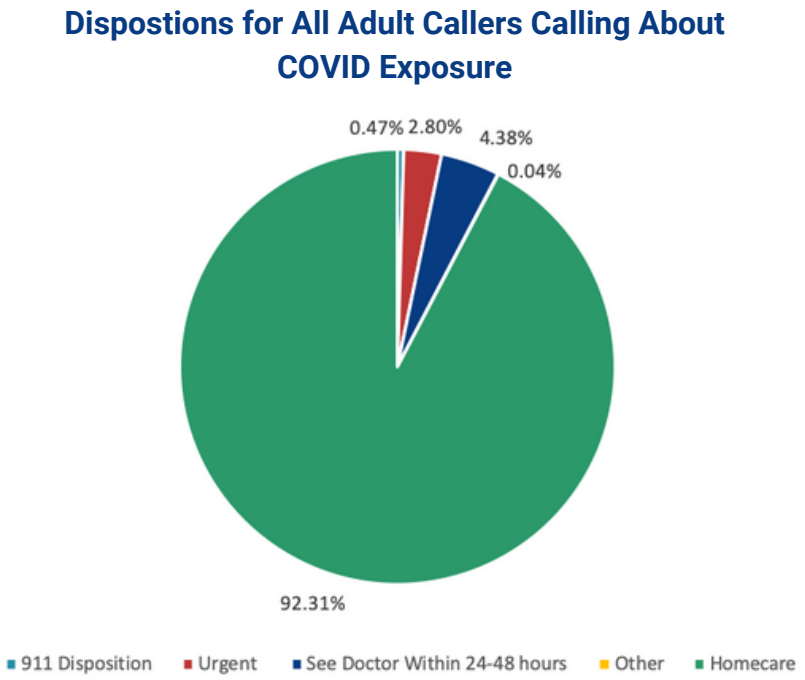

Figure 6A: *Breakdown of disposition assigned by the triage nurse to all patients who called and were triaged under the COVID exposure protocol.*

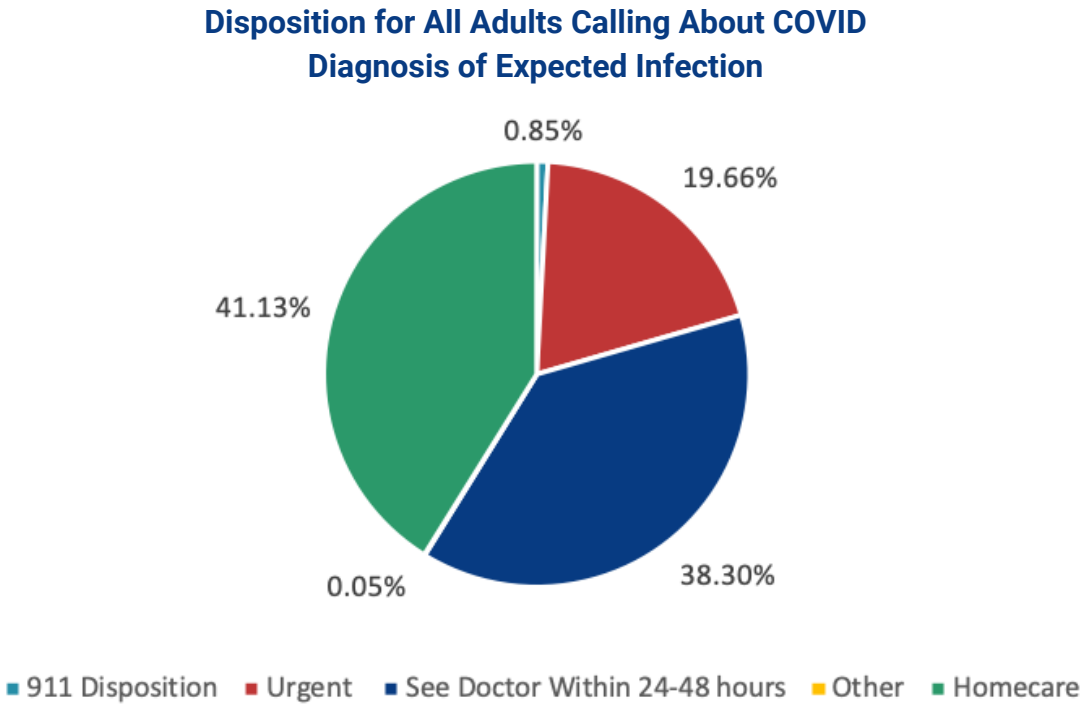

Figure 6B: *Breakdown of disposition assigned by the triage nurse to all patients who called and were triaged under the COVID diagnosed or suspected protocol.*

Out of all calls from January – October 2020, about 46% of adult callers could be treated with homecare. Of adult callers exposed to COVID, about 92% could be treated with homecare, with the remaining 8% requiring a follow-up with a medical professional. **Thus we find that, compared to the average patient, patients calling only about COVID exposure were twice as likely to not require medical attention.** It is likely that these patients were simply calling about worries over contracting COVID-19, not specific concerns about symptoms. This points to the benefit of having a triage nurse line where nurses can educate patients without requiring physician intervention.

In comparison, only 41% of those who were diagnosed with COVID-19 could be treated with homecare. **Our results suggest that patients who called with about COVID diagnosis or suspected infection were more likely than the average patient to need medical attention, although their symptoms were often less emergent.** About 20% of patients calling with a COVID diagnosis required urgent attention compared to 30% overall. About 38% of patients diagnosed with COVID required a follow-up with a doctor. In the general population, only 23% of patients needed to see a physician. These results suggest that patients who called the triage nurse about COVID-19 were relatively good at assessing the severity of their symptoms and knowing when to seek medical attention.

Figure 7 provides a detailed month-by-month analysis of the care advice instructions for adult patients who called with COVID-related concerns. Patients calling about exposure made up a smaller share of total calls, however they still called at relatively high rates considering that their symptoms were generally not serious. In section five, we will provide possible explanations for the high rate of COVID-exposure calls. COVID-diagnosed patients were more likely to need medical attention. Throughout the pandemic, the number of COVID-diagnosed patients who required urgent care remained relatively consistent. On the other hand, we find that the number of patients who are told to see their doctor increases.

In March, only about 6% of patients who were diagnosed with COVID were told to see their doctors. In October, almost 50% of such patients were told to see their doctor within 24 to 48 hours. **Thus, the average patient calling with a COVID diagnosis or suspected infection got sicker over time as the pandemic continued.** Providers also became more efficient at directing patients to the appropriate level of care. They began referring patients to their primary care doctors at higher rates, reducing the number of patients seeking emergency services. Triage nurses helped efficiently direct patients to the right level of care, improving patient outcomes and lowering the burden on providers.

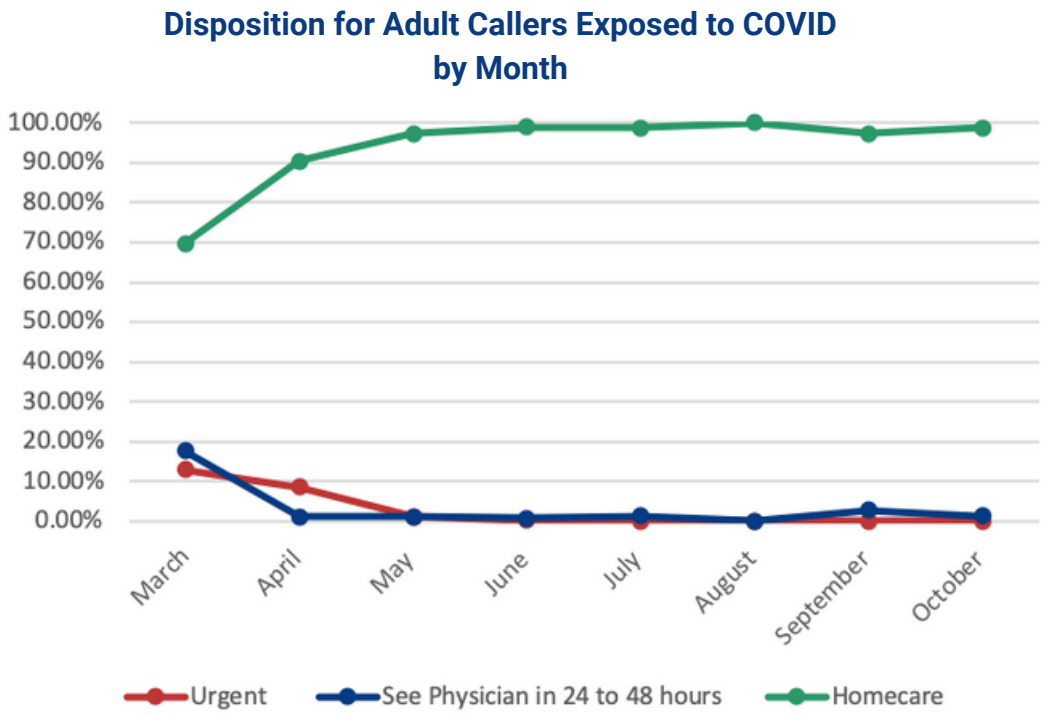

Figure 7A: *A monthly breakdown of the disposition assigned to the patient by the triage for patients triaged under the COVID exposure protocol.*

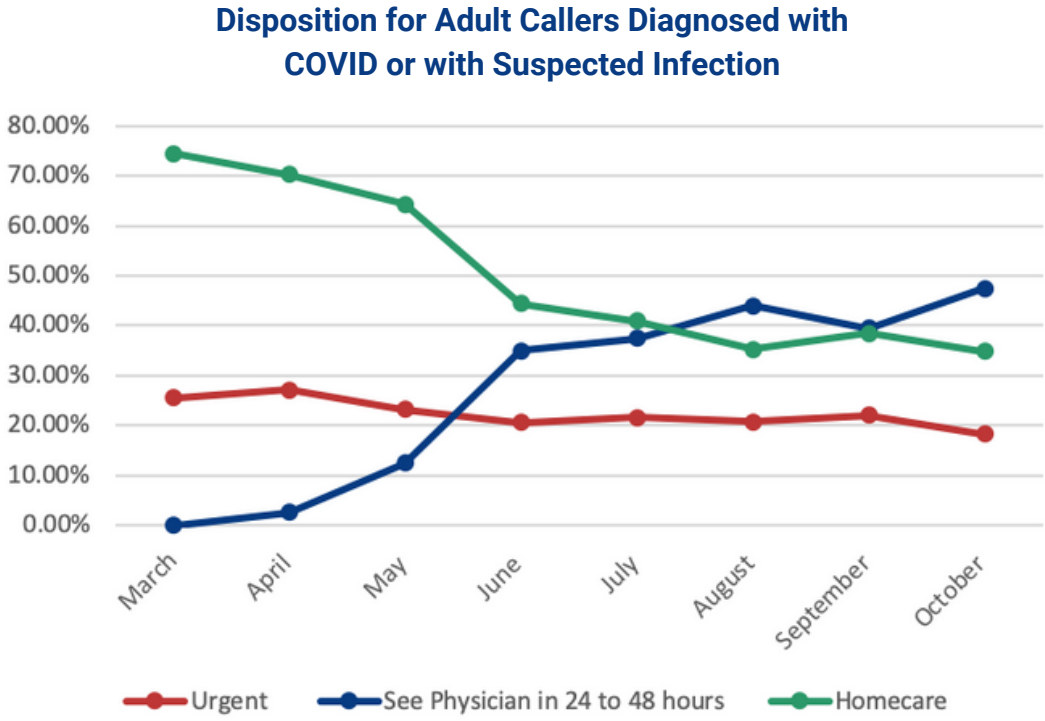

Figure 7B: *A monthly breakdown of the disposition assigned to the patient by the triage for patients triaged under the COVID diagnosed or suspected protocol.*

4. Why did people call about COVID at high rates at the beginning of the Pandemic?

In Section 3 we showed that rates of COVID-related calls, especially those about exposure, were high during March 2020 in comparison to the number of cases in the US. We also find that calls about exposure remain high, even though more than 90% of patients calling about exposure do not need to seek medical care.

Anxiety about COVID seems to be the driver for the high number of calls. Figure 8 studies the rates of mental health related calls from January – October 2020. We include calls about anxiety and depression. These calls were not specifically related to COVID-19. And patients who called the triage nurse line were not experiencing medical symptoms; they were calling only about mental health. Those who experienced anxiety or depression along with medical symptoms would have been categorized in the appropriate triage protocol.

We find that the rate of anxiety calls increased dramatically in April 2020 in comparison to previous months. Our nurse triage service received 7 calls about anxiety in January, compared to 78 calls in April. Both calls about depression and anxiety spiked in response to increases in the total number COVID cases in the United States (shown in Figure 4).

Rates of mental health calls provide insights into why patients may have called at high rates about exposure in March and as the pandemic continued. In March, it's likely that patients were not very educated about the symptoms of COVID. They called the nurse triage service because they were anxious about the disease and seeking information even if they were not experiencing symptoms or if their symptoms were related to a different condition. As the pandemic continued, patients continued to call about exposure and COVID-related concerns, but were not necessarily experiencing symptoms.

More than 90% of patients did not need to see a doctor (Figure 5). Telephone nurse triage serves as a way to provide information and reassure patients who were not seriously ill so that they avoid visiting doctors' offices and emergency rooms.

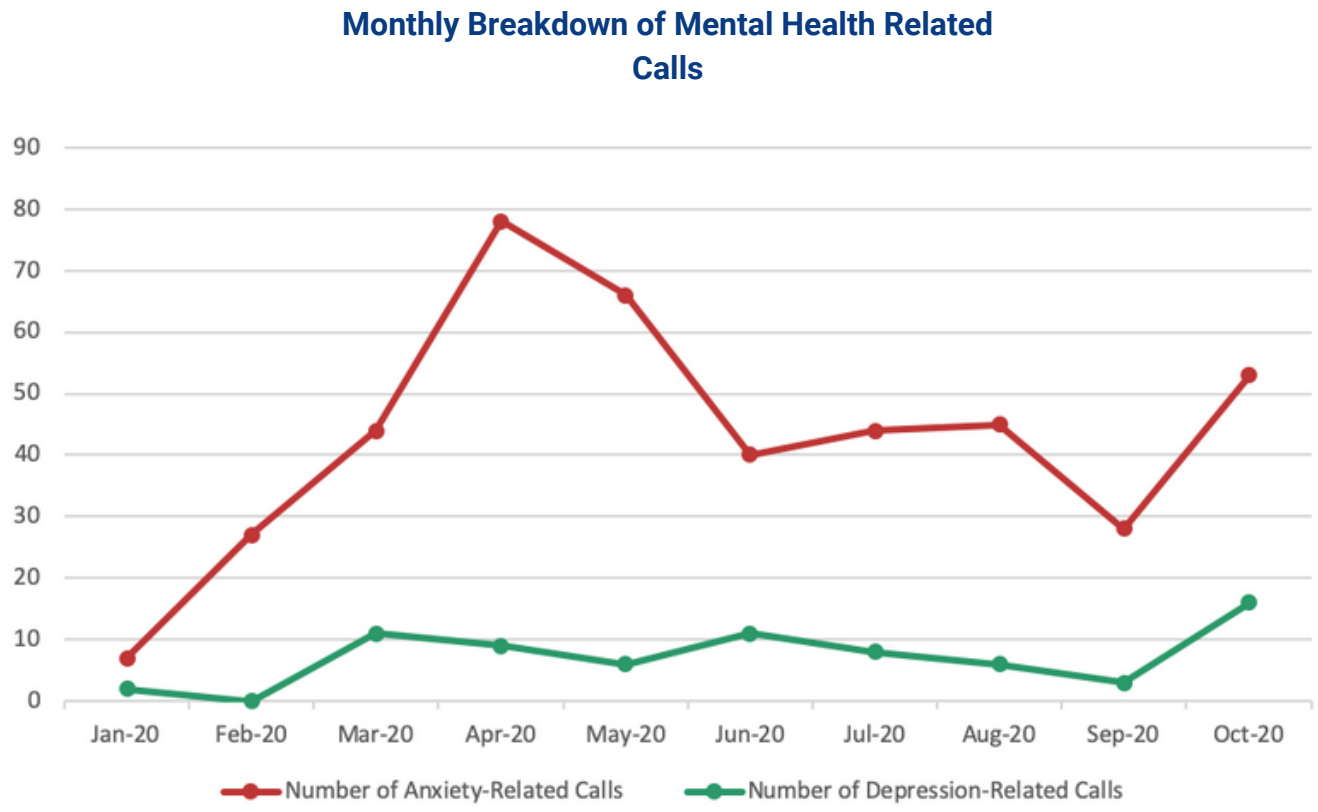

Figure 8: *Number of calls about anxiety and depression to the nurse triage service from January - October 2020.*

5. Did Patients Avoid Seeking Urgent Care?

In section 5, we found that patient anxiety increases during the COVID-19 pandemic because of worries about becoming infected with the disease. Studies show that worried patients avoided medical care for both COVID and non-COVID related concerns. The CDC estimates that 12% of adults in March and April 2020 did not seek urgent care for fear of contracting COVID-19. In the final section of our study, we look at whether or not patients were avoiding medical care during the COVID-19 pandemic. In addition to evaluating patients and giving them a disposition for their symptoms, nurses asked each patient to answer survey questions. Patients were asked to indicate whether or not they were planning to go to the Emergency Room (ER) prior to calling the nurse. Figure 3 provides a breakdown of patient responses on whether or not they were planning to go to the ER. We find that out of about 69,000 adult callers during the COVID-19 pandemic, about 59,000 or 86% of patients were not planning on going to the ER. Figure 9 provides the survey responses for all patients.

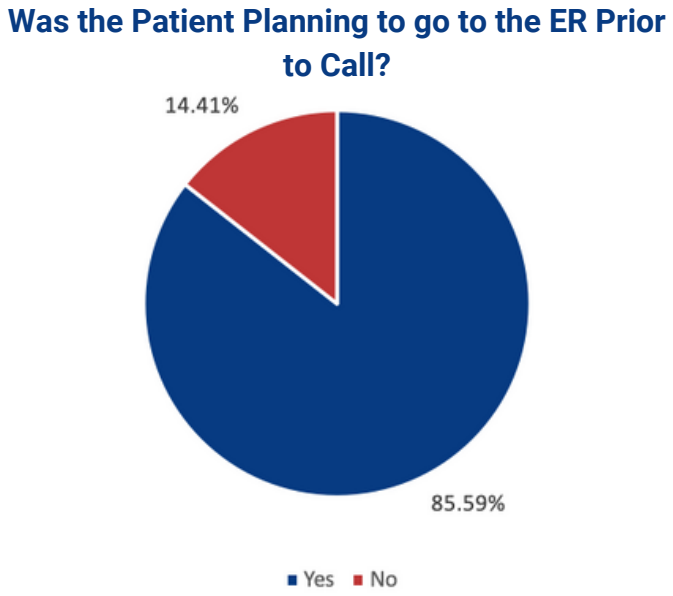

Figure 9: *Breakdown of responses to the survey asking adult patients if they were thinking about going to the ER prior to calling to the triage nurse.*

We compared survey responses with the patient's disposition. In order to calculate potential lives saved during COVID with nurse triage, we focus on the 86% patients that were not planning to go to the ER, indicated in blue in Figure 9. We looked at how many of these callers who were not planning to go to the ER were assigned an urgent disposition by the triage nurse. Figure 10 presents the percentage of urgent dispositions given for patients who were not planning to go to the ER. Data on the survey responses was not available before February 2020.

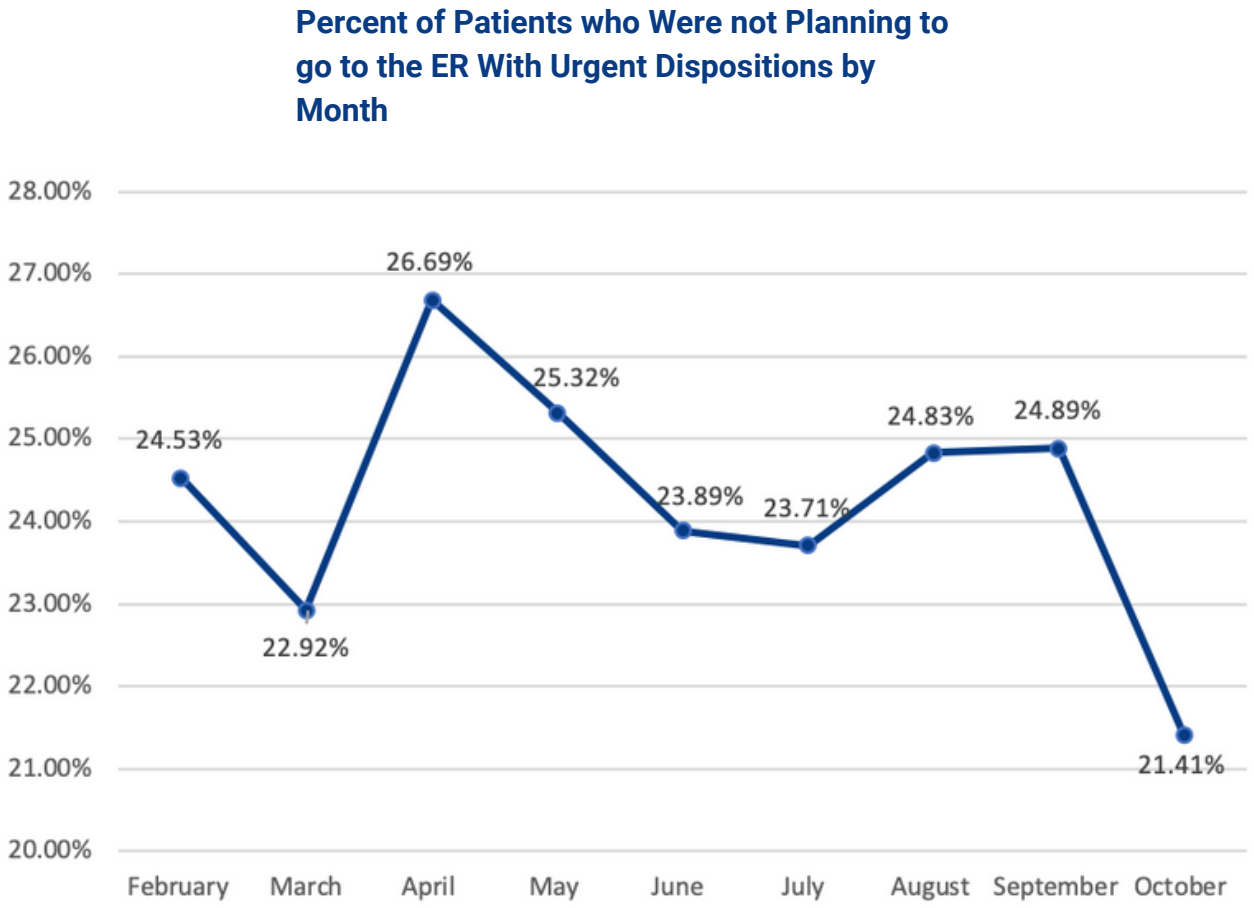

Figure 10: *We look at patients who answered "No" to the survey, indicating that they were not planning to go to the ER. This figure presents a monthly breakdown of what percent of these patients were told to seek urgent care by the triage nurse.*

We find that in March, at the beginning of the pandemic, patients were actually more likely to go to the ER. However, as the pandemic continued, surges in the virus were correlated with increased patient avoidance of the ER. We also find that the total number of anxiety calls is correlated with a higher percentage of patients who were not planning to go to the ER and were told to seek urgent care by the triage nurse. In April, when virus anxiety was at the highest point, more than 1 out of every 4 patients who were not planning to go to the ER were told to seek urgent medical attention.

The results of our study suggest that at the beginning of the pandemic, patients were avoiding seeking medical attention, likely due to COVID anxiety. Even patients who were not calling about COVID, were more hesitant to seek medical care for other conditions. As the pandemic continued, both COVID anxiety and the number of patients who avoided seeking medical attention lowered, but remained elevated during additional waves of cases.

The exception is October 2020 when patients seem increasingly likely to go to the ER. The number of COVID-related calls also spiked during October 2020 (Figure 3). It may be that as cases spiked and more patients called because they were infected, they were more likely to go to consider going to the ER because they were concerned about their symptoms.

Conclusion

During this difficult time, we've seen big changes in the healthcare industry. With the COVID-19 pandemic threatening to overwhelm practices and hospitals nationwide, healthcare workers have learned valuable lessons and identified data that we will utilize to hone our response to these health crises. One of those lessons is the importance of effective triage.Nurse triage has allowed hospitals and even whole municipalities to organize their COVID response and prioritize those who need critical care. As the COVID pandemic rapidly evolved, patients were understandably anxious and concerned and needed to reach out for guidance and reassurance.

At the same time, office locations were closed and unable to see patients as they were accustomed to doing. Nurse triage allowed nurses to remotely screen people using standardized protocols and determine the appropriate level of care, providing reassurance. Identifying who needs urgent care first allows doctors to allocate precious resources and time efficiently.Protocols like the Schmitt-Thompson protocols have always been imperative for doctor practices and hospital systems; for quality of care, legality, and efficiency.

Now, we are seeing their importance magnified. Our current circumstances show us that implementing protocols for remote nurses is now an indispensable key in healthcare procedures. They've aided an industry under stress by allowing better organization, careful planning, and proper response for major health events.