

Trends in the Utilization of the Pediatric Emergency Department during the COVID-19 Outbreak

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Abstract

Background: Despite numerous prior interventions to reduce unnecessary visits to the emergency department (ED), overutilization and overreliance on EDs continue to negatively impact quality of care and cost. **Objective:** Motivated by finding solutions to ED overuse, we evaluated the effect of COVID19 on pediatric ED utilization, specifically focusing on patients with pulmonary diagnoses. **Methods:** A retrospective study was conducted to review visits to the pediatric ED at Phoenix Children's Hospital. The baseline pre-COVID19 period ranged from 01/01/2016 to 03/14/2019. Post-COVID19 data were collected from 03/15/2020 to 07/31/2020. Study subjects included all patients between 0-18 years of age. Data was collected biweekly for the number of ED visits, admission to hospital from ED, presenting diagnosis and pulmonary consults. **Results:** The average number of biweekly ED visits decreased significantly from 3437 during baseline to 2061 post-COVID19, while the percent of hospital admissions increased from 0.14% to 0.18% ($p < 0.01$). A significant decrease was also observed in the biweekly average number of pulmonology consults (527 to 250), and the percent of pulmonology consults (0.15% to 0.11%), presenting diagnosis of asthma (130 to 59), tracheostomy (7 to 6), cystic fibrosis (7 to 5), cough/wheeze (66 to 41) and bronchiolitis/upper and lower respiratory tract infections (300 to 126). No changes were detected in chronic respiratory failure, respiratory distress or hypoxemia. **Conclusion:** Many factors including telehealth, improved infection control measures, social responsibility, and fear of getting sick may have played a role in the reduction in our ED visits during the COVID pandemic.

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Abbreviated 'Running' Title: Pediatric ED Usage During COVID-19

Dear Editor,

As the world continues to struggle with the novel coronavirus disease 2019 (COVID-19) pandemic, we must take a critical look at the impact on healthcare. COVID-19 is an acute respiratory disease caused by the novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). With the respiratory system as a primary target of the virus, it was anticipated there would be an escalating rate of emergency department (ED) utilization, particularly amongst patients with chronic respiratory diseases including children.

Contrary to the overburden experienced by adult hospitals, initial observations indicated a sharp decrease in ED visits to children's hospitals during the COVID-19 epidemic. This was very striking and notable since historically, there has been an overreliance on the ED as parents frequently bring their children to the ED for visits that are judged to be "non-urgent" and inappropriate. One estimate suggests that avoidable ED use ranges as high as 56% of all visits and costs 38 billion dollars annually. (1, 2)

Some reasons why parents bring their children to the ED include seeking a quick and convenient solution to a health issue, inability to get a primary care appointment, a perception that the ED has better quality of care, lack of understanding of insurance coverage as it relates to the ED, no access to primary care, and referral to the ED by primary care physicians themselves.

Numerous interventions have been implemented to reduce unnecessary ED utilization rates. These have included patient center home models, financial incentives to primary care physicians, denial of coverage, improved clinic access, retail clinics, and improved care coordination with the use of patient navigators. Although all these initiatives have shown improvement, the problem of overutilization persists.

Motivated by finding solutions to ED overuse, we evaluated the effect of COVID-19 on pediatric ED utilization, specifically focusing on patients with pulmonary diagnoses in our free-standing children's hospital in Arizona. Biweekly ED visits, the percent of hospital admissions from ED, frequency and percent of pulmonary consults and frequency of presenting diagnosis were compared between COVID-19 (03/15/2020 and 07/31/2020) and a baseline period including the overlapping calendar weeks from the previous four years (2016-2019), using the Wilcoxon rank sum test. The average number of biweekly ED visits decreased significantly from an average of 3437 at baseline to 2061 during COVID-19, while the percent of hospital admissions increased from 0.14% to 0.18% ($p < 0.0001$). A significant ($p < 0.05$) decrease was also observed in the biweekly average number of pulmonology consults (527 to 250), the percent of pulmonology consults (0.15% to 0.11%), the presenting diagnosis of asthma (130 to 59), tracheostomy (7 to 6), cystic fibrosis (7 to 5), cough/wheeze (66 to 41) and bronchiolitis/upper and lower respiratory tract infections (300 to 126). No changes were detected in chronic respiratory failure, respiratory distress or hypoxemia.

The marked decrease in the number of ED visits occurred during the months of March and April 2020, when the COVID-19 pandemic was at its peak and a national lockdown was being instituted. The percentage of patients being admitted was higher which suggests that patients presenting had higher critical acuity. The percentage of pulmonary consults decreased, which could have been due to a push to avoid aerosolizing procedures such as bronchoscopies. The lowest point of ED decrease was noted at the 12 week point, which coincides with the lockdown period in Arizona, when most schools and businesses were closed. Subsequently, the number of ED cases slowly increased. However, it never exceeded the number of visits prior to COVID-19.

The acute drop in ED admissions may be explained by several factors. Due to social distancing and the school shutdown, children were not in close proximity and the spread of common respiratory viruses dissipated. The current nationwide enforcement of masks and higher use of hand sanitizer has also likely helped with infection control and reduced ED admissions or respiratory infections. Additionally, elective surgeries were cancelled, which decreased the rate of ED visits due to postoperative complications. With social distancing and less travel, there were fewer accidental injuries and trauma cases. There was also less air pollution due to decreased driving, a known trigger for asthma exacerbations.

From a sociocultural perspective, negative reinforcement and/or social responsibility might have played a

role in reducing the number of ED visits during the COVID-19 outbreak. Fear of contracting COVID-19 could have dissuaded people from utilizing the ED. Media messages to reduce the spread of COVID-19 centered around social distancing, and re-iterated by the “Stay at Home” campaign. Individuals might have felt compelled ethically to avoid the ED, and instead utilize another method, such as calling the primary care provider to serve their medical needs.

The quick adoption of telehealth by hospitals and insurers during the pandemic likely aided in the reduction of ED visits. Parents were able to communicate quickly with primary care and specialty care physicians, frequently avoiding a visit to the ED. Due to its convenience, telehealth has allowed for improved show rates to clinics, while also limiting overall exposure between individuals (3, 4). Pharmacies have expanded their mail-order capabilities in attempts to keep up with the guidelines and social distancing recommendations from the CDC. This allowed families to obtain medicines more consistently and likely has led to higher compliance.

In conclusion, there are many factors including telehealth, improved infection control measures, and social responsibility that may have played a role in the reduction in our ED visits during the COVID-19 pandemic. Using educational tools, and social media to promote infection control and social responsibility in the community may help curb ED overutilization. Telemedicine may also be a good tool to screen visits and help with non-urgent needs. Further research will be needed to assess the long term ED utilization trends post COVID-19. Continued evaluation of the trends will allow us to develop more efficient ways to deliver healthcare. Careful consideration will need to be employed to make sure that underutilization does not occur and lead to worse clinical outcomes.

References

1. A Matter of urgency: reducing emergency department overuse. NEHI research brief 2010
2. Weinick, R., Billings, J., Thorpe, J. (2003). Ambulatory care sensitive emergency department visits: a national perspective. *Abstr AcademyHealth Meet*, 20(abstr No. 8), 525-526
3. Portnoy, J, Waller, M, Elliott, T. Telemedicine in the Era of COVID-19. *J Allergy Clin Immunol Pract.* 2020 May;8(5):1489-1491
4. Papadopoulos, NG et al. Impact of COVID-19 on Pediatric Asthma: Practice Adjustments and Disease Burden. *J Allergy Clin Immunol Pract.* 2020 Sept (8):2592-2599

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