Conclusions: The COVID-19 pandemic impacted the training of emergency medicine residents in various aspects. Northeast programs were more affected compared to the other regions. Weekly didactic sessions largely transitioned to a virtual format and/or small group sessions. Off-service rotations overall were not significantly affected. Retrospective clinical research continued while there was a substantial disruption in prospective research projects. Finally, a positive outcome was the increased awareness to changes in improving resident well-being overall.

62 Network Analysis To Understand Regional Patient Flow

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Study Objectives: Consolidation of health care systems in the United States has created integrated enterprises with large geographical reach and complex interacting components. Specialty services vary among sites, and patients often need to travel between facilities for different aspects of care. Network science is an established method employed to investigate these complex systems, and can be used to identify bottlenecks, opportunities to increase value and patient-centeredness in health care. The COVID-19 pandemic changed care demand patterns unexpectedly. We wanted to investigate if network analysis would allow us to better understand these changes and challenges - where our patients receive hospital-based care, what services they used and how far they travelled. We focused this analysis on a multispecialty, tertiary care academic center emergency department ("AC_ED"), with 70,000 patient visits annually.

Methods: We extracted patient location information from electronic health records, including originating location and level of care, to create a network representation of all care pathways that passed through our ED. The volume of transfers between nodes and the distance travelled were encoded as weighted/colored edge attributes, with edges between nodes in closer proximity being darker. Nodes include: communities within our service area, EDs, and academic center units, and an outcome of mortality. They are sized/colored by betweenness centrality, reflecting the importance of the node in the integrity of the network.

Results: The figure shows the overall network structure was similar for pre- and post-pandemic onset with some changes in details. AC_ED receives patients from many home locations and referring hospitals. A large proportion of visits come from the local area reflected by M16 and M12. There are many patients who travel far to access emergency care at AC_ED, bypassing local EDs though the average distance travelled to access care reduced from 114 to 85 miles. During the pandemic there was more traffic to the AC_ED from the local area (M16), fewer connections to surrounding hospitals and disproportionately reduced visits from distant areas (O and OT). Low ED volumes and restricted outpatient clinic availability during the pandemic time frame likely affected this. Inter-hospital transfer volumes declined overall, several sites transferred very few patients to AC_ED post-pandemic start, and other sites increased their transfer rate (eg, CAH13).

Conclusions: Looking at hospital systems through the lens of network science can reveal changes in patterns of referrals, allows for identification of unexpected results by presenting data visually and can assist identifying crucial components of a health care system. Application of this methodology to other variables has the potential to identify new areas of improvement to increase value, outcomes and services to improve patient-oriented care.

Figure: Networks of care

Pre-pandemic onset

Post-pandemic onset
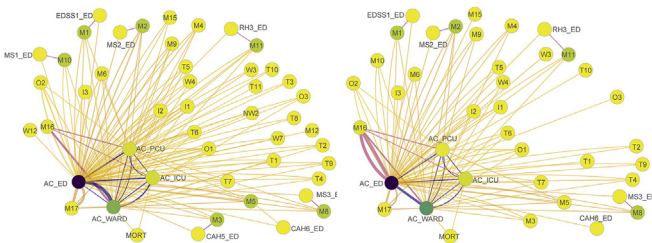
Key:
Home locations: M, O, W, T, I
Hospital size: MS, EDSS, AC, RH, CAH
Hospital units: PCU, ICU, Ward, ED
Mortality: Mort

63 The Impact of the COVID-19 Pandemic on Social Determinants of Health on Patients in a Rural Academic Emergency Department

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Background: Stay-at-home orders and social distancing recommendations, combined with COVID-19 concerns, have caused significant disruptions in daily life. Throughout the pandemic, vulnerable populations, commonly seen within the University of Iowa emergency department, have been more negatively affected by COVID-19.

Study Objectives: To assess how the social needs of the population cared for within the University of Iowa emergency department have changed in response to the COVID-19 pandemic.

Methods: The Center for Medicare and Medicaid and Services (CMS) social risk assessment was adapted, covering 13 specific domains, to assess changes to participants' social situations throughout the COVID-19 pandemic dated from January 2020 to February 2021. It was administered within the emergency department to individuals selected by a convenience sample who were stable enough to complete the form. Frequencies with percentages, fisher's exact test, logistic regression were used to analyze the categorical data. Dependent variables of interest were analyzed by age group, sex, and race.

Results: A total of 305 patients were approached and 207 (68%) responses were received. Of the included responses 7/177 (4%) identified as Hispanic or Latino, 15/175 (8.6%) as Black or African American, and 151/175 (86.3%) as white. The survey respondents indicated that 7.1% had worsened employment situation in comparison to before COVID-19. Moreover, 14.5% found it harder to pay for basics such as food, housing, medical care, and heating compared to prior to the pandemic, and 10.1% reported worsening lack of reliable transportation. Further, 26% stated that feelings of loneliness have worsened along with 30% reporting more stress, while 16.8% reported feelings of little interest or pleasure in doing things have improved along with 20.8% reported feeling down, depressed, or hopeless also improved in comparison to before the pandemic. Lastly, 2.5% stated their physical safety had worsened and 6.5% were experiencing worsening verbal abuse. The logistic regression showed that the odds ratio (95% CI) for increased financial difficulty for Non-Caucasians vs Caucasians is 10.5 (2.7 -40.3) and the odds ratio (95% CI) for increased financial difficulty for females vs males is 2.9 (1.1 – 7.7).

Conclusion: The COVID-19 pandemic led to overall greater financial instability and increased stress. Non-Caucasians and females were more likely to report that their financial situations worsened. Isolation, stress, and forms of abuse were also found to worsen. Nevertheless, symptoms of worsening depression were found to be improve among our study population. In light of these findings, it is important to understand how the pandemic affected numerous social determinants of health, especially for individuals who were already experiencing unmet social needs. With a better understanding of the health needs of our population, identifying strategies to improve overall wellness can be better achieved.

64 Progression of COVID-19 from Urban to Rural Areas in the Southwest: A Spatiotemporal Analysis of Prevalence Rates

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Background: COVID-19 emerged in the United States on January 20, 2020 and has rapidly proliferated across the nation affecting more than 15 million individuals. Case incidence rates vary at the local, county, and state levels and it is unclear if a difference exists in the incidence of new COVID-19 cases among urban or rural counties. Due to county population density and geographic progression of the virus over time, COVID-19 may demonstrate variable incidence rates among urban and rural population centers.

Study Objective: The present study examines whether temporal differences in the incidence rate of diagnosed cases of COVID-19 exist between urban and rural counties in the Southwest United States.

Methods: Daily COVID-19 cases from Arizona, California, Oklahoma, Texas, and Utah were retrospectively tabulated on a county basis using publicly accessible