Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Conclusion: Air EMS significantly decreases risk of mortality when compared to ground EMS. The likelihood to transfer to a higher acuity care hospital is similar if the trauma cases are transferred by air or ground EMS.

51 Interactive Home Monitoring of ED Patients with Suspected or Confirmed COVID-19
Vinton D, Thomson N/University of Virginia, Charlottesville, VA

Study Objectives: Remote in-home monitoring technology has become an increasingly important means to conserve hospital and emergency department (ED) capacity while providing observation and care for high-risk patients with milder symptoms during the COVID-19 pandemic. We aimed to evaluate the safety of introducing an Interactive Home Monitoring program (IHM) for high-risk patients discharged from the emergency department (ED) with suspected or confirmed COVID-19 who without remote monitoring would have required admission to the hospital.

Methods: We assessed the clinical outcome of ED patients with suspected or confirmed COVID-19 who had a risk factors for severe disease and were discharged from the ED with IHM. Patients were identified for enrollment in the IHM program if they had suspected or confirmed COVID-19 and had risk factors for severe illness from COVID-19 as defined by the Centers for Disease Control and Prevention (CDC) guidelines. Eligible ED patients were required to be hemodynamically stable with no new oxygen requirement, but assessed by an ED attending physician as needing hospital admission. Patients who met criteria were enrolled in the IHM program prior to ED discharge and were provided with equipment including a blood pressure cuff, pulse oximeter, thermometer, iPad, instructions on how to use the equipment, and 24 hour technical assistance hotline. At home patients were remotely managed by trained Advanced Practitioner Providers who addressed vital sign changes and escalated care needs when appropriate. The clinical course of IHM patients including return ED visits, hospital admissions, and hospital course were followed for 30 days following ED discharge.

Results: A total of 52 ED patients were enrolled in the IHM program from 4/15/20 to 5/30/20. 7 patients required a return visit to the ED (13%; 95% CI) with 6 patients requiring admission to the hospital (12%, CI 95%). All 6 admitted patients (100%) were admitted to a floor bed with a mean length-of-stay of 3.3 days (s = 1.7 days). The most common reason for admission was hypoxia (50%) or dehydration (50%). No IHM patient required intubation, non-invasive positive pressure ventilation, or respiratory support beyond 2.4 liters of supplemental oxygen. The one patient who presented to the ED but did not require admission was diagnosed with non-COVID related chest pain. No mortalities occurred during the study period nor were there any documented adverse outcomes noted for patients discharged home on IHM.

Conclusion: In this initial review to assess the safety of introducing IHM for high-risk ED patients with confirmed or suspected COVID, we found that patients without a new oxygen requirement and stable vital signs could be discharged home with remote monitoring without increasing the risk for adverse clinical outcomes. Additionally, the introduction of the IHM program reduced hospital admissions for this patient population, decreased potential hospital exposures, and conserved critical inpatient beds for unstable patients requiring onsite medical care.

52 Acceptance of Telemedicine Screening for COVID-19 Outside Usual Health System Catchment Area
Lyon M, Kuchinski A, Coule P, Gibson R/Medical College of Georgia at Augusta University, Augusta, GA

Study Objectives: In order to prevent spread of an infectious disease such as COVID-19 widespread testing is needed. However, few communities, particularly in states with large rural and medically underserved populations, have the infrastructure or expertise to start such a testing program especially within a short period of time. Further a standardized approach to screening for the appropriateness of COVID-19 testing is critical to not overwhelming hospital and state resources. Telemedicine offers a method which can standardize screening without limitations of catchment area, county and state borders. Our objective was to evaluate the utilization of a telemedicine screening program by patients outside the usual catchment area of a health care system.

Methods: This was a prospective observational study measuring the outcomes of a telemedicine based COVID-19 screening program. The telemedicine health system consists of a single tertiary care hospital on the border of 2 states. The telemedicine screening program was free to the citizens of Georgia and South Carolina. Demographic and location data was collected in the telemedicine app utilized for the telemedicine contacts. Usual catchment area of the telemedicine health system is defined from population health data using patient county of residence.

Results: From March 13, 2020 until June 10, 2020, 24,510 telemedicine visits have been completed with 20,165 (82%) from Georgia and 4345 (18%) from South Carolina. 2649 (10.4%) were less than 20 years of age, 3577 (14.6%) were older than 60 years of age and 211 (0.8%) were older than 80 years of age. 15,280 (62%) were male and 9,355 (38%) female. 15,550 (63.4%) of the telemedicine visits were from citizens of the surrounding 4 counties (catchment area) while the remainder (8,960) spread across Georgia and South Carolina. 15,441 (63%) were sent for COVID-19 testing. Correlation of telemedicine visit from rural counties will be added.

Conclusion: The rapid development and deployment of a statewide COVID-19 screening program is feasible. Citizens will utilize a telemedicine platform outside their home geographic area for screening services unavailable locally. Geographic borders and traditional hospital catchment areas are less significant when utilizing telemedicine allowing for health care to be delivered to rural and health care-poor communities.

53 Emergency Clinician Perceptions of Electronic Personal Protective Equipment for Medical Screening Exams of COVID-19-Suspected Patients
Blatt MI, Miller NM, Ward MJ, Unerti KM, Novak LL, Luter RW/Vanderbilt University School of Medicine, Nashville, TN; Vanderbilt University Medical Center, Nashville, TN

Study Objectives: The novel coronavirus (SARS-CoV-2) pandemic placed unprecedented strain on the supply of personal protective equipment (PPE) in health care settings, particularly the emergency department (ED). Innovative strategies were needed for PPE conservation. Our ED deployed electronic PPE (ePPE) - a telehealth approach to conduct medical screening exams (MSEs) of COVID-19-suspected patients. As part of our plan to scale this intervention, we sought to evaluate provider perceptions of ePPE-based MSEs.

Methods: We conducted a qualitative analysis at Vanderbilt University Medical Center in Nashville, TN. Emergency clinicians were identified through use of structured ePPE documentation elements in the EHR. Patients who received ePPE-based MSEs included English-speaking adults with fever or respiratory symptoms (inclusion criteria: age < 50; SpO2 > 94%; RR < 20; HR < 110; no cardiovascular, respiratory, or immunosuppressive history). We invited providers to participate in semi-structured video interviews (Zoom, San Jose, CA). A Likert scale between 1 [Not at all effective] and 5 [Extremely effective] was used to gauge perceived ePPE effectiveness. We recorded and transcribed interviews, subsequently extracting then encoding notable excerpts using Dedoose (SocioCultural Research Consultants, Los Angeles, CA). Thematic analysis was performed using

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intervention characteristics from the Consolidated Framework for Implementation Research (CFIR): intervention source, evidence strength and quality, relative advantage, adaptability, trialability, complexity, design quality and packaging, and cost.

Results: We identified 18 clinicians who documented ePPE use. On review, 2 never used ePPE and 5 only supervised other clinicians who used ePPE. Of the remaining 11, I interviewed 7 attending physicians and 1 physician assistant between 5/15/20 and 6/5/20. Providers gave ePPE a mean effectiveness score of 4.2 (SD 0.53). Identified advantages included improved patient and provider safety, PPE conservation, and improved patient-provider communication. The primary perceived limitation was inability to auscultate the lungs. While noting the risk of missed alternate diagnoses (eg, heart failure), providers asserted that video-based history-taking and respiratory exam sufficed for low-acuity patients and that auscultation’s absence was unlikely to change management. Beyond MSEs, providers used ePPE for patient reassessment and counseling, as well as to facilitate supervision. Many emphasized ePPE’s flexibility: “If I do pick up on a few things...I can always, sort of, abandon [ePPE] and go in and do my exam.” Barriers to use included potential for negative patient perceptions, poor audio quality, difficulty incorporating an interpreter, and workflow challenges related to staff coordination. Clinicians revealed that many ePPE encounters were not fully documented, suggesting ePPE use may be underreported in this study.

Conclusion: In this trial implementation of ePPE, we found that ED clinicians perceived ePPE as an effective and useful technique for MSEs of COVID-19-suspected patients. The benefits largely outweighed the disadvantages, particularly in the low-acuity population. Our study may have been limited by early adoption from clinicians favorable to such technology, and future work should examine perceptions among clinicians with varying degrees of technology comfort.

54 From the COVID-19 Epicenter: Using Telemedicine to Serve the Needs of the Geriatric Population

Truong J, Heravián A, Olsen E, Kenny J, Benton E, Sano ED/Columbia University Irving Medical Center, New York, NY

Study Objectives: The COVID-19 pandemic is responsible for over 400,000 deaths worldwide with New York City (NYC) as the epicenter of the pandemic in the United States. Geriatric patients were at especially high risk. As of June 2020, the New York City cumulative death rate by age: > 75 years was 1555/100 K population, while for 45-64 years it was 187/100 K population. Telemedicine (TH) was used as a tool to shift non-emergent care from overburdened emergency departments and to provide routine and urgent health care to the community who were directed to self-isolate and often fearful of seeking care during the pandemic. While offering the ability to reach many patients, remote health care options presented unique challenges due to technology requirements, visual, hearing, cognitive and often language limitations in our diverse multilingual geriatric community. Our study’s goal was to evaluate the use of remote health care during the COVID-19 pandemic in NYC at our institution. We compared the frequency of geriatric use during the flu season with a similar interval during the pandemic.

Methods: We conducted a retrospective chart review of patients 65 and older who were evaluated remotely by a ED provider on a telemedicine platform that was accessible on a desktop or mobile phone (TH) during the local pandemic surge: from 3/1 to 4/30 2020 at a hospital in northern Manhattan/NYC. Chart extraction methods were developed and performed by 5 emergency physicians. Categories and characteristics were defined in advance and included demographics, technical limitations, referral to ED, and death occurring during the time of the chart review.

Results: During the pandemic study period a total of 140 charts were extracted. The mean age was 75. Overall, 20% of patients in the cohort were advised to seek emergent care. Some day emergent care referral occurred in 12% (65-75yrs), 36% in (76-85 yrs) and 61% (> 85 yrs). We found significant growth in use of TH from pre-pandemic (12/1 to 1/23/2019), 7 patients >65 years utilized the TH platform while during the pandemic (3/1 - 4/23/2020), 130 patients over the age of 65 utilized TH to access health care.

Conclusion: Geriatric Telemedicine showed an exponential growth during the pandemic. TH program efforts to promote its use to redirect patients away from the ED were successful. Given the rate of same day emergent referrals there was a variable level of acuity that reinforces the need to have telehealth providers that are trained in triage and emergency medicine with a knowledge of local resource availability.

55 Assessing Financial Risk among Uninsured Patients Seeking Care in the Emergency Department

Scott KW, Sabbatini AK, Scott JW, Chen C, Kaldjian AS, Liu A, Dieleman JL, Duber HC/University of Michigan, Ann Arbor; Me; University of Washington, Seattle, WA; Institute for Health Metrics and Evaluation, University of Washington, Seattle, WA; Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; Department of Emergency Medicine, University of Washington, Seattle, WA

Study Objectives: Patients who lack insurance are uniquely reliant on the emergency department (ED) as a safety-net for vital care. Though the number of uninsured Americans initially declined after the Affordable Care Act (ACA) was enacted, the uninsured rate has been on the rise since 2017. Financial risk protection for patients is critically important as nearly two-thirds of bankruptcies are attributable to medical bills, a problem that is likely to worsen as healthcare costs continue to increase. However, the degree to which ED bills contribute to financial strain among uninsured patients is currently unknown. To address this gap, we aim to conduct the first-known national analysis to estimate and characterize the risk of economic hardship due to ED bills among uninsured patients.

Methods: The primary data source is the Nationwide Emergency Department Sample, which is the largest publicly-available, all-payer database that captures a nationally-representative sample of U.S. hospital-based ED visits from 2006 to 2017. We obtained each encounter’s insurance status, age, sex, primary diagnosis, zip code income quartile, source file (treat-and-release ED visits versus those hospitalized through the ED), and charge for ED services. The analytic sample was limited to uninsured, treat-and-release ED visits in 2017. Each encounter’s household income was estimated using zip code income quartile data as has been done in prior studies. Following prior work, a catastrophic health expenditure (CHE) was defined as health expenses (ie, the listed ED charge) that exceeded 10% of projected household income. We calculated the percentage of uninsured treat-and-release ED encounters that met criteria for receiving a CHE bill and characterized this risk by income quartile.

Results: In 2017, there were an estimated 144.8 million ED visits. Of all ED visits, 86% were treat-and-release encounters with 13% being uninsured among this group. Among the uninsured treat-and-release ED encounters, 51% were male, mean age was 34 years, and the median ED charge was $2090 (mean = $3853, range: $100-$551442). A plurality fell into the lowest income quartile (43%), while 11% were categorized in the highest income quartile. An estimated 23% of all uninsured treat-and-release ED encounters met criteria for receiving a CHE bill, which translates to a weighted estimate of over 3.58 million (95% CI, 3.57 million - 3.59 million) ED encounters in 2017. This at-risk group’s median ED charge was $8710 (mean = $11476). Those with the lowest income had the highest risk for receiving a CHE bill for ED care (Figure 1).

Conclusion: Using a conservative estimate for assessing financial hardship among uninsured ED patients, these findings suggest that nearly 1 in 4 uninsured visits were at risk of receiving a financially catastrophic bill for ED care in 2017. This equates to approximately 3.6 million treat-and-release ED encounters that year. Examining these trends over time will be important in light of historic declines in employment and dynamic changes in insurance coverage that disproportionately burden low-income patients.