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Dear Doctor,

Greetings from Micro Labs limited. We are happy to bring **"CRITICONNECT"** containing latest information in the field of Critical care medicine.

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Looking forward to your valuable feedback

Best Regards,
Medical Team, Micro Labs Ltd



Acute Kidney Injury in Severe Cases of COVID-19

INTRODUCTION



A high risk of severe kidney injury among contaminated patients was outlined by new evidence from two health systems in New York City — where clinics failed to keep up with dialysis demands when they were overwhelmed with COVID-19 patients.

33.9 per cent experienced severe kidney failure in the first 1,000 patients of COVID-19 at the Irving Medical Center at NewYork-Presbyterian / Columbia University. For the 236 that ended up at the ICU, 78 per cent formed AKI, stated by Ruijun Chen, MD, and colleagues in The BMJ.

A specific study of approximately 5,500 COVID-19 patients seen by April 5 in the 13 Northwell Health System hospitals, the AKI average was 36.6 per cent high. Kenar Jhaveri, MD, of Northwell Health in Great Neck, New York, stated in *Kidney International* that the average was 89.7 per cent for those on mechanical ventilation.

New York City hospitals have identified desperate conditions with availability of dialysis and equipment shortages, with at least one death allegedly attributable to lack of capacity to deal with the increase of acute kidney failure during the COVID-19 period. The latest findings have consequences for hospital preparedness as the pandemic progresses, said the University of Pittsburgh School of Medicine's NKF President-elect Paul Palevsky, MD, who was not interested in the study.

Jhaveri said that what it can tell us is acute kidney damage in patients with COVID-19, especially serious COVID-19, is an essential component of disease cycle. Hospitals need to have the ability to provide care via dialysis. He says if we see a spike as social distancing becomes increased, they would have to be prepared to expand the availability of urgent dialysis in hospitals.

The results were greater than anticipated from China and Italy 's initial data, which indicated 0.5 percent to 29 percent total AKI, "with most figures at the lower end," and the 19 percent originally recorded from an ICU in Seattle, Jhaveri 's group observed.

There could be a variety of components at differing levels. Ladan Golestaneh MD of Montefiore Medical Center stated that the age and amount of comorbidities of the examined population matter, as does the nature of the disorder. He said that as if physicians who care for such patients looked at the stress of comorbidity and the need for ICU existed as good measures of the progression of AKI, in which case they would need to brace for renal replacement therapy delivery. The participants had a higher average level of body mass, greater incidence of asthma, diabetes, and chronic pulmonary disease than those described in populations in Italy and China.

Jhaveri 's analysis of 5,449 patients admitted to COVID-19 used medical chart examination to identify AKI with the KDIGO parameters. While roughly half of patients only entered stage 1 AKI, stage 2 formed at 22.4% and stage 3 at 31.1%. Among these, 14.3% required renal replacement treatment, and 96.8% of the 285 that received dialysis were on ventilators. The outlook of those who formed AKI was weak when 35 per cent died. This was "bleaker" with dialysis requirement: 157 out of 285 those patients died and at the time of study, only 9 were released from the facility. Chen 's group indicated that the elevated incidence of renal problems may have been attributed in part to restricting the usage of IV fluids when treating patients with acute respiratory distress syndrome as a method for handling lung fluids.

Additionally, they reported that there may be intrinsic renal toxicity correlated with COVID-19's pathophysiology, provided that levels of acute kidney failure are elevated even in patients not undergoing intensive treatment or others without acute respiratory distress syndrome.

SOURCE: Argenziano MG, et al. Characterization and clinical course of 1000 patients with coronavirus disease 2019 in New York: retrospective case series. *BMJ* 2020;369:m1996

The Association Between Socioeconomic status and Readmissions for Patients Hospitalized with Sepsis

INTRODUCTION

Sepsis is a life threatening, severe malfunction of the organs triggered by an infection. Though sepsis affects millions of people every year, in-hospital mortality from this condition has declined significantly over the last 2 decades. There has emerged a large cohort of sepsis survivors with the fall in mortality.

However, patients of sepsis risk severe health-care effects owing to their underlying comorbidities being compounded or additional complications and conditions arising. Furthermore, these effects have culminated in expensive and disjointed use of health services at a period when there is insufficient knowledge of optimal treatment and control of post-sepsis rehabilitation. One effect of patients enduring sepsis in clinical care is a greater risk of rehospitalizations. Rehospitalizations after sepsis are common, with more than one third of sepsis survivors readmitted to hospital within 30 days of initial discharge, and up to 40 percent within 90 days of discharge. Many factors are associated with the likelihood of post-sepsis rehospitalization, from antibiotic exposure to individual socioeconomic factors, such as minority status, low income and male gender.

One difficulty inherent in utilizing specific socioeconomic factors to determine rehospitalization danger for sepsis patients is that several of these factors are not adequately identified in clinical practice, thus restricting patient-centered solutions to the management of sepsis rehabilitation. Furthermore, socio-economic risk factors at background level (specifically neighborhood) may affect health results independently of generally assessed individual-level influences by mechanisms such as greater exposure to unsanitary conditions or lack of safe food supply, which may intensify current conditions and raise the probability of readmission. The impact of the neighborhood disadvantage on US sepsis rehabilitation and sepsis rehospitalizations is unclear, however. Considering this association can help to plan and execute strategies to support specific populations discharged from hospital following sepsis admission. The objective of this study was to evaluate associations between a readily available composite measurement of neighborhood socioeconomic disadvantage (the area deprivation index) and 30-day readmissions for patients who were previously hospitalized with sepsis.

METHODS

Design: A retrospective study.

Setting: An urban, academic medical institution.

Patients: The authors conducted a manual audit for adult patients (18 yr old or older) discharged with an International Classification of Diseases, 10th edition code of sepsis during the 2017 fiscal year to confirm that they met SEP-3 criteria.

Interventions: None.

RESULTS

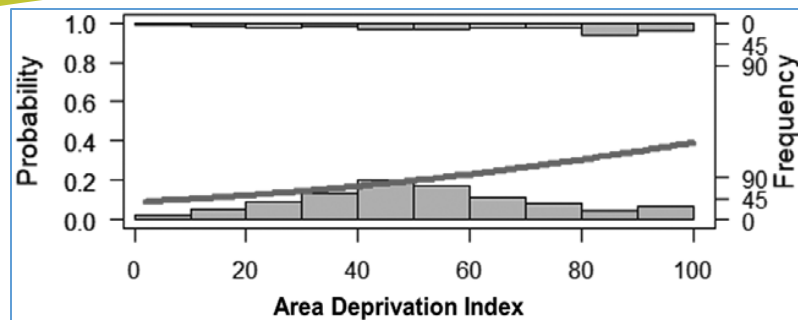
The area deprivation index is a publicly available composite score constructed from socioeconomic components (e.g., income, poverty, education, housing characteristics) based on census block level, where higher scores are associated with more disadvantaged areas (range, 1–100). Using discharge data from the hospital population health database, residential addresses were geocoded and linked to their respective area deprivation index. Patient characteristics, contextual- level variables, and readmissions were compared by t tests for continuous variables and Fisher exact test for categorical variables.

The associations between readmissions and area deprivation index were explored using logistic regression models. A total of 647 patients had an International Classification of Diseases, 10th edition diagnosis code of sepsis. Of these 647, 116 (17.9%) either died in hospital or were discharged to hospice and were excluded from this analysis. Of the remaining 531 patients, the mean age was 61.0 years (± 17.6 yr), 281 were females (52.9%), and 164 (30.9%) were active smokers. The mean length of stay was 6.9 days (± 5.6 d) with the mean Sequential Organ Failure Assessment score 4.9 (± 2.5). The mean area deprivation index was 54.2 (± 23.8). The mean area deprivation index of patients who were readmitted was 62.5 (± 27.4), which was significantly larger than the area deprivation index of patients not readmitted (51.8 [± 22.2]) ($p < 0.001$). In adjusted logistic regression models, a greater area deprivation index was significantly associated with readmissions (β , 0.03; $p < 0.001$).

Variable	Total (n = 531)	Was Not Readmit- ted (n = 414)	Was Readmitted (n = 117)	p
Body mass index	30.0 (22.9–35.1)	29.6 (24.9–37.5)	28.2 (24.2–35.3)	0.61
History of chronic disease				
Diabetes (%)	186 (35.0)	146 (35.3)	40 (34.2)	0.37
Chronic obstructive pulmonary disease	125 (23.5)	94 (22.7)	31 (26.5)	0.07
End-stage renal disease on hemodialysis	19 (3.6)	15 (3.6)	4 (3.4)	0.01
Source of sepsis				
Pulmonary	251 (47.3)	193 (46.6)	58 (49.6)	0.08
Abdominal	96 (18.1)	76 (18.4)	20 (17.1)	0.11
Urinary	170 (32.0)	132 (31.9)	38 (32.5)	0.51
Other/unknown	14 (2.6)	10 (2.4)	4 (3.4)	0.27
Vasopressor (%)	337 (63.5)	257 (62.1)	75 (64.1)	0.07
Mechanical ventilation (%)	101 (19.0)	77 (18.6)	24 (20.5)	0.14
Continuous renal replacement therapy (%)	39 (7.3)	28 (6.8)	9 (7.7)	0.22

Results are presented as mean $\pm$ SD or median (interquartile range). Boldface value indicates statistical significance.

In-Hospital Variables and Outcomes



Logistic regression (dark line) with readmissions as an outcome graphed against area deprivation index frequency distribution for both readmissions (top x-axis) and non-readmissions (bottom x-axis).

CONCLUSIONS

The research notes that people who endured sepsis and live in poor communities, irrespective of other socioeconomic characteristics and morbidities, have a greater likelihood of rehospitalization. The findings underline the importance of the socioeconomic status of the community in the position of patients who survive sepsis and are discharged from hospital, as defined by the ADI. Whereas more work is needed to clarify the association between social status in the community and sepsis-related consequences (such as readmissions), area-level interventions such as ADI can be clinically helpful in helping to build more equity approaches for rehospitalization of sepsis recovering highrisk patients.

REFERENCES

Galiatsatos P, Follin A, Alghanim F, et al. The Association Between Neighborhood Socioeconomic Disadvantage and Readmissions for Patients Hospitalized with Sepsis. *Crit Care Med*. 2020;48(6):808-814.

Affordable Care Act: A Comparison of Outcomes in Patients with Severe Sepsis and Septic Shock

INTRODUCTION

Sepsis is the most severe and costly disease in hospitals throughout the United States. Given initiatives for clinical enhancement and improved visibility, sepsis accounts for more than 50 per cent of all patient fatalities. Access to health insurance is a primary predictor of results. Passed in 2010 the Universal Care Act increased access to health insurance services.

A primary result factor is exposure to treatment due to loss of medical coverage. A longitudinal analysis of uninsured people with serious sepsis showed that these patients were more likely to have major disease on medical admission, more damaged organs, and greater mortality from all causes. If these results are related to variance in the facility or exposure to disparities in sepsis treatment between covered and non-insured entities is uncertain.

Statistics suggest that uninsured people enroll less often in preventive health programs, neglect obtaining treatment and have poorer results. Since the reduction of sepsis morbidity and mortality depends on early recognition and intervention, the lack of insurance coverage may be a significant roadblock in seeking healthcare, leading to poor patient outcomes in the end. From 1997 to 2007, many states increased pharmaceutical drugs for low-income individuals, lowering mortality by 6.1% while increasing distribution, access to treatment, and self-reported wellbeing. Uninsured people, aged 18–64, admitted with serious sepsis from 2000 to 2008 had a higher death rate than insured individuals. Ideally, through exposure to health insurance would boost adherence to treatment by encouraging covered people to receive services faster, leading to a decrease in morbidity as well as mortality. This research intended to use a broad national database to determine how ACA introduction led to better results in patients with serious sepsis or septic shock.

METHODS

Design: This retrospective study uses data from the Healthcare Cost and Utilization Project National Inpatient Sample during 2011–2016. Data were divided into two groups: 2011–2013 (pre Affordable Care Act) and 2014–2016 (post Affordable Care Act).

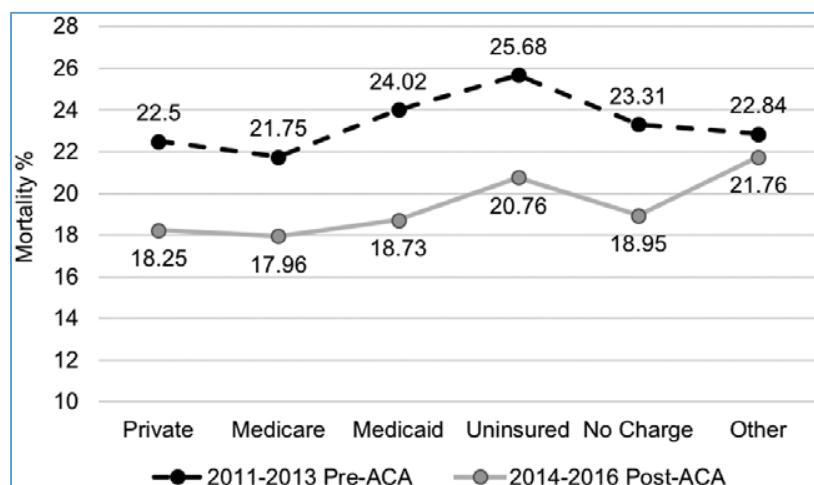
Outcomes were in-hospital mortality, mortality rates based on insurance type, and hospital length of stay.

Patients: Hospitalized adults between the ages 18 and 64.

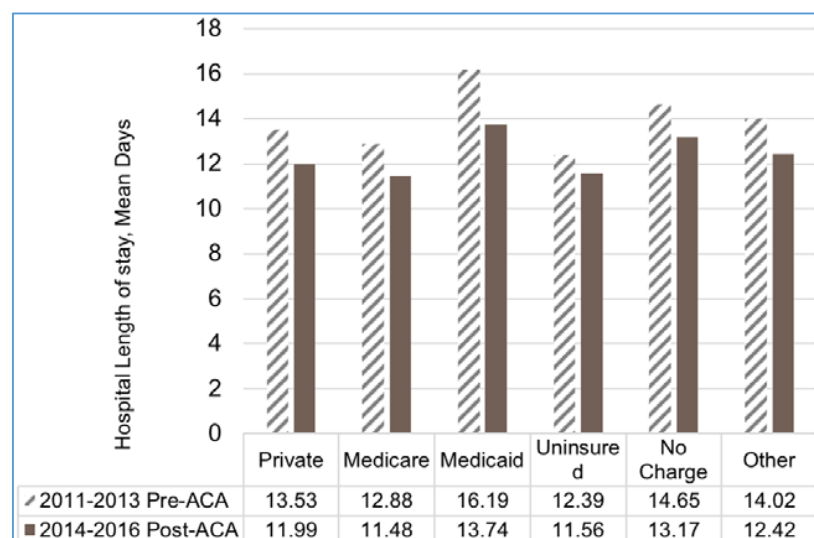
Interventions: None.

RESULTS

A total of 361,323 severe sepsis or septic shock hospital discharges were included. Comparing pre-Affordable Care Act with post-Affordable Care Act, there was a 4.75% increase in medicaid coverage and a 1.91% decrease in the uninsured. Overall in-hospital mortality decreased from 22.90% pre-Affordable Care Act to 18.59% post-Affordable Care Act. Pre-Affordable Care Act uninsured patients had the highest mortality (25.68%). Patients with medicaid had the greatest reduction in mortality (5.71%) and length of stay (2.45 d). The mean (sd) length of stay pre Affordable Care Act was 13.92 (17.42) days, compared with 12.35 (15.76) days post Affordable Care Act. All results were statistically significant ($p < 0.0001$).



Mortality rate based on insurance type, comparing pre-Affordable Care Act (ACA) and post-ACA ($p < 0.0001$).



Hospital length of stay based on insurance type, comparing pre-Affordable Care Act (ACA) and post-ACA ($p < 0.0001$).



CONCLUSIONS

In this study, the treated patients with extreme sepsis and septic shock post-Affordable Care Act improved. Mortality and duration of stay decreased with the largest decline found in the medicaid community during the post-Affordable Care Act era. The change in results may be due to improvements in administration, better diagnosis, fewer seriously sick patients and faster care.

REFERENCES

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