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Ob-gyns: Canaries in the coal mine for COVID-19

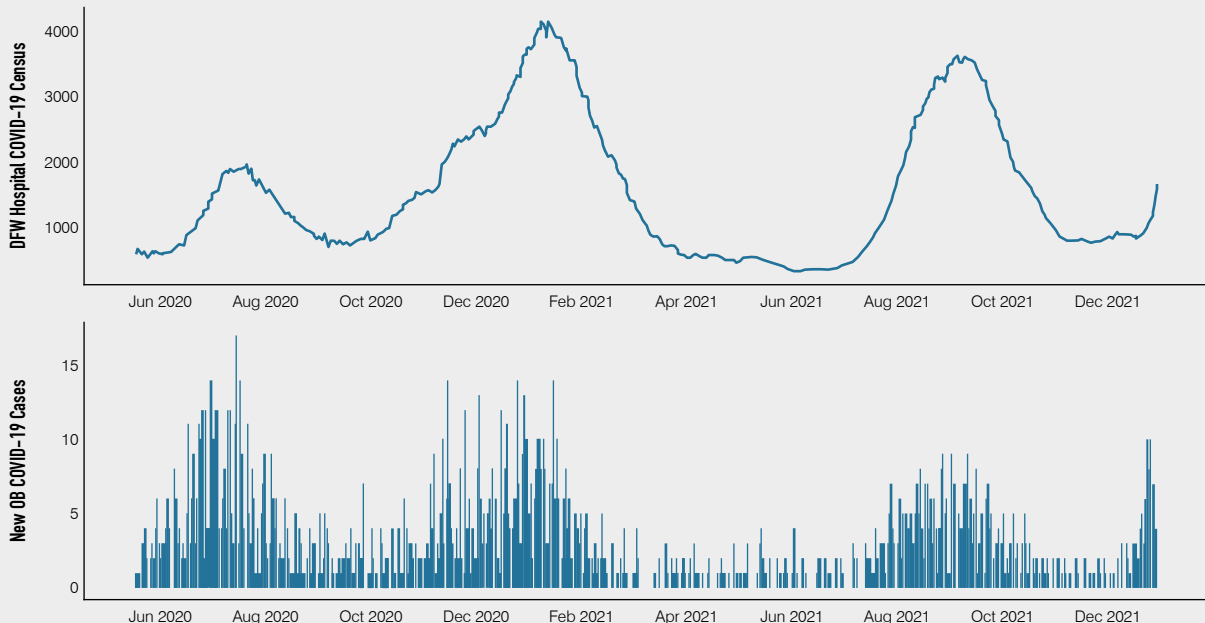
Obstetrics and gynecologists (ob-gyns) are tough. Thrust into the front lines of the pandemic, we were called upon to not only care for patients with COVID-19 but to do so against the backdrop of ongoing nonelective care. Put simply, obstetrics never stopped. As we reflect on the heroic work of our colleagues and friends, it is interesting to frame our experiences through ebbs and flows of case counts for the past 2 years. We saw community burden through a unique lens given constant patient volume, access to COVID-19 testing in outpatient and inpatient ar-

reas with integrated electronic health records, early universal testing at delivery for mothers and exposed infants, and screening for those admitted during antepartum care.

Indeed, being in the labor and delivery department the past 2 years often felt like one was the canary in the coal mine. As COVID-19 surges came and went, we felt that the day-to-day rise in number of positive cases we diagnosed foreshadowed the rise in hospitalizations. Taking this to our statisticians, we asked them to see whether they could prove our hypothesis. The statistics were more complex than we expected.

At Parkland Hospital in Dallas, Texas, where there are nearly 12,000 births per year, the service was testing as many as 50 women a day. A time series analysis was used to compare the number of new COVID-19 cases in obstetrics and the number of new COVID-19 cases hospitalized in the Dallas-Fort Worth trauma service area. The Kwiatkowski-Phillips-Schmidt-Shin test was used to test the assumption of stationarity in both data sets. This assumption indicates that each time series has no dependence on the time it is being observed (no trend, seasonality, etc). The data were determined to be stationary,

FIGURE. Obstetrics COVID-19 Case Volume vs Hospital COVID-19 Census



DFW, Dallas-Fort Worth, Texas; OB, obstetrics.

FIGURE AUTHOR PROVIDED

TABLE. Do Obstetric COVID-19 Case Counts Predict Future Rises in Hospital Census?

Lag	P
1	.004
2	.490
3	1
4	1
5	.069
6	.211
7	.210

and the Granger causality test was used to determine whether the obstetrics COVID-19 counts at differing lags in addition to the changing hospital census counts were useful for forecasting the hospital census count in the future. A lag of 1 would indicate using obstetrics counts 1 day prior, a lag of 2 would be

using the obstetrics counts 2 days prior, and so on. We tested to see how far out the obstetric case counts became the “canary.” Lags of 1 to 7 days were tested to assess the usefulness of the prior week of obstetrics data in forecasting the Dallas–Fort Worth hospital census. *P* values were adjusted using the Bonferroni method to control the inflated type I error rate due to multiple testing. Statistical significance is indicated by *P* < .05.

Interestingly, the data proved our point. The obstetric COVID-19 cases 1 day prior forecasted hospital census increases in our metroplex (**Figure, Table**). We believe the same could be done with continued ongoing local surveillance, but that is not yet a reality because most community testing is done for an indication rather than universally. That is, community testing availabil-

ity waxes and wanes in response to a recognized surge. Although these data are limited in predicting a surge far in advance, the labor and delivery department statistics did serve as a safety signal for the community. Ob-gyns were the canaries in the coal mines of COVID-19 community burden. We hope to use this insight and similar data in the future to guide targeted responses to disease spread. ■

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