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Discussion

Dr Ara Vaporciyan (*Houston, Tex*). Dr Falcoz and his colleagues have leveraged a new modern multi-institutional database

to examine the impact of the National Cancer Plan on outcomes—specifically mortality—associated with the treatment of lung cancer.

I actually sent Dr Falcoz my questions ahead of time and he actually already answered 2 out of the 3, so in the interest of letting the crowd have an opportunity to ask a question, I'm going to go right to the third question.

I suspect that it is hard, as you identified, to dissect the impact of a new database and the Hawthorne effect from the impact of a new National Cancer Plan. However, considering the health care environment in the United States, I would imagine that many of us in this audience are very interested in any evidence that demonstrates the true value of a national health care plan or any sort of nationalization of care. Therefore, this question really focuses on what you are going to do next. As the new National Cancer Plan in France gains traction, how are you going to truly examine the impact of that plan on the delivery of care?

Dr Falcoz. Thank you for your final question, Dr Vaporciyan.

It might be a little bit difficult to answer, because, as you said, it is a challenge to highlight the individual contribution of the database from the National Cancer Plan, especially as the participation in our database is a mandatory requirement as one of the measures of the cancer plan. So it is difficult to dissect between the two contributions because one is mandatory. Clearly, the legal measure of the cancer plan for a given department means that you belong to a database. To conclude, I don't think it will be possible to clearly give you an answer of who does what. The effects are mixed.

COMMENTARY

Editorial comment

Benjamin D. Kozower, MD, MPH

The volume–outcome relationship has been used as a proxy measure for quality for more than 3 decades since first proposed by Luft and colleagues¹ in 1979. In this issue of the *Journal of Thoracic and Cardiovascular Surgery*, Falcoz and colleagues² report the results of lung cancer resection

in France captured in the Epithor database. From 2005 to 2010, the database captured the data for almost 20,000 patients undergoing anatomic lung resection for lung cancer. The most striking result of their report was the decrease in 30-day mortality from 10% in 2005 to 3.8% in 2010.

The authors used sophisticated hierarchical logistic regression models to evaluate the relationship between procedure volume (both surgeon and hospital) and 30-day mortality. Rather than categorizing the procedure volume into arbitrary groups such as quartiles or quintiles, the authors appropriately modeled volume as a continuous variable using a polynomial function. The results have demonstrated that surgeon volume, but not hospital volume, was associated with 30-day mortality, with a *P* value < .05. Although this is statistically significant, it is unclear how

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Disclosures: Author has nothing to disclose with regard to commercial support.

Received for publication Feb 12, 2014; accepted for publication Feb 14, 2014; available ahead of print March 28, 2014.

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J Thorac Cardiovasc Surg 2014;148:848-9
0022-5223/\$36.00

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<http://dx.doi.org/10.1016/j.jtcvs.2014.02.042>

clinically important surgeon volume would be as a predictor of mortality. Two simple statistical tests could have helped the reader make this determination and have been performed by our group when studying the volume–outcome relationship.^{3,4} First, the models could have been repeated without the volume variable to determine whether a change occurred in model performance. If no change was found in the c statistic of 0.81, volume would have contributed very little to the predictive capacity of the model. Second, the statistical significance of the fixed effects for each variable in the model could be assessed using the F test statistic. The F test provides a number that enables the reader to rank the variables in order of their contribution to the predictive capacity of the model. A P value that reaches statistical significance of <.05 could have a very small F test statistic and contribute little to a predictive model.

In conclusion, the National Cancer Plan in France deserves tremendous credit for a dramatic decrease in perioperative mortality during the 5 years studied. The results of the study have demonstrated that surgeon volume

is statistically associated with 30-day mortality; however, the clinical significance of this finding remains in question. Importantly, the authors advocate for the careful examination of clinical outcomes data for the measurement of quality rather than using procedure volume as a proxy measure. Participation in this systematic clinical database (Epithor) was a key component of the National Cancer Plan and allows participants to benchmark themselves and critically evaluate their performance.

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