

As the first multicenter clinical trials of airway management in adult OHCA, PART and AIRWAYS-2 suggest that, at best, ETI offers no survival advantage over the simpler LT and i-gel supraglottic airways.^{1,4} It is difficult to justify the more challenging technique, higher training burden, and adverse event profile of ETI when supraglottic airways offer simpler and equally effective alternatives.³ Airway management innovations, such as video laryngoscopy, deserve further study but would likely bring new technical, operational, and financial complexities. We advocate that rescuers “keep it simple” and use a strategy of initial LT or i-gel supraglottic airway insertion in the resuscitation of patients with OHCA.

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Potential Unintended Effects of Medicare's Bundled Payments for Care Improvement Program

To the Editor Dr Navathe and colleagues studied whether Medicare's Bundled Payments for Care Improvement (BPCI) program led to unintended consequences, including changes in volume and case mix.¹ Based on an estimated differential change in market volume between participating and nonparticipating markets of 0.32% (95% CI, -0.06% to 0.69%; $P = .10$), they concluded that BPCI participation “was not associated with changes in market-level lower extremity joint replacement volume.” This conclusion has statistical and practical problems.

The authors posited a null hypothesis of no differential change between BPCI and non-BPCI markets and then sought evidence against this null. When they did not find statistically significant results, they concluded that participation in the program was not associated with changes in volume or case mix.

However, failing to reject the null hypothesis is not the same as accepting the null. Failing to find statistically significant results and then concluding that the null is true is misleading^{2,3} and reflects misuse of P values noted by the statistical community.⁴

In fact, null results cannot be interpreted fully without also considering power. Power is often considered adequate if there is at least 80% probability of detecting an effect of some pre-specified size. Well-powered studies have a 20% chance of missing an effect that large, if it exists. In reality, many medical studies have lower power, meaning a higher probability of missing practically significant effects.⁵

The article by Navathe and colleagues, however, gives no information about the power to detect a prespecified, practically significant effect. Rather, in the limitations section, they wrote that the study may have had “inadequate power to detect a statistically significant difference between the 3.8% and 4.4% changes in volume in non-BPCI and BPCI markets, respectively.”

Instead of concluding that an effect is practically significant based on whether it was statistically significant, the point estimate and confidence interval should instead be interpreted in the policy context. In this study, the confidence interval included differential changes in volume that ranged from 0.69% to -0.06%. If a change in volume of 0.69% or smaller would be important for Medicare's roll-out of bundled payments, then this study cannot rule out a potentially important unintended consequence at the 5% level. By contrast, if only changes larger than 0.69% would affect policy, this study can rule out practically important effects at the 5% level.

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To the Editor Although Medicare's BPCI program for lower extremity joint replacement (LEJR) reduced health care costs by \$1166 per episode¹ (a 3.9% savings from about \$30 000), there

are concerns that the shift to bundled payments could encourage clinicians to increase volumes overall and preferentially treat healthier patients, possibly inappropriately so.^{2,3}

Dr Navathe and colleagues⁴ found no “changes in volumes or the majority of patient case-mix factors” when studying market-level changes in per-capita LEJR volumes and patient case-mix factors associated with BPCI.

Their article, however, provides little reassurance on these issues because their primary finding showed a trend toward higher volumes ($P = .10$), and many of their secondary findings pointed to both selection effects and increases in volume.

When compared with propensity-matched non-BPCI-participating hospitals, patients at BPCI-participating hospitals had fewer comorbidities and were less likely to be frail or recently to have used an inpatient rehabilitation facility (both $P < .10$); they also were less likely to have used a skilled nursing facility recently ($P = .01$). However, when compared with all non-BPCI-participating hospitals, Navathe and colleagues found that patients at BPCI-participating hospitals were statistically significantly less likely to be frail or to have had any institutional care use in the prior 12 months (eFigure 4 in the Supplement). It is not clear why the propensity-matched analysis should be accepted as definitive.

Regarding volumes, after adjustment for market factors and patient characteristics thought to influence LEJR volumes, the authors found a 0.39% relative increase in per-capita uncomplicated LEJR rates ($P = .04$) in markets with BPCI-participating hospitals and no significant increase in volumes in the propensity-matched hospital-level analysis. However, when comparing BPCI-participating hospitals with all non-BPCI hospitals, Navathe and colleagues found a 9.2% relative increase in LEJR volumes ($P = .008$) as well as a 1.0% increase in LEJR market share ($P = .03$; eTable 5). These findings are consistent with BPCI-related increased volumes, and it is not clear why they should be discounted, particularly if one is interested in the BPCI program’s overall effect on Medicare costs.

Bundled payments have the potential to improve care for Medicare beneficiaries by creating incentives to improve quality, safety, and care coordination, but they may also lead to less beneficial unintended consequences such as increased volumes, avoidance of less healthy patients (who may have more to gain), and conflict with other alternative payment models.^{2,3} Medicare should continue to rigorously evaluate the effect of bundled payment programs.

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In Reply We agree with Ms Bilinski and Dr Hatfield about the difference between failing to reject and accepting the null hypothesis. In our study, we failed to reject the null hypothesis that BPCI participation was not associated with differential changes in LEJR surgery volume.¹ Although we also agree that our analysis of beneficiaries within 306 markets could be underpowered to detect small effects, simulations suggested that large volume responses would be needed to overwhelm savings from BPCI participation. Toward that end and as a matter of practical significance, Medicare would still retain 83% of its savings from bundled payments if volume changes occurred at the upper bound of our confidence interval (a 0.69% increase in volume). This provides reassuring evidence that bundled payments for LEJR are associated with significant Medicare savings.

Drs Weeks and Fisher cite our secondary hospital-level findings to reiterate concerns about volume increases under bundled payments.² We vigorously disagree with their interpretation and worry that propagating concerns not based on the best evidence will lead to mistaken policies regarding bundled payments.

Changes in LEJR volume at BPCI-participant hospitals could occur for either of 2 reasons: (1) new LEJR procedures that increase overall volume and total Medicare spending or (2) growing LEJR market share that keeps overall procedural volume stable and lowers Medicare spending by shifting which hospitals perform LEJR for Medicare beneficiaries. Obviously, Medicare should continue to ensure that bundled payment policy does not increase the total volume of procedures. The hospital-level analyses emphasized by Weeks and Fisher cannot distinguish between these 2 explanations and address the central policy question of whether bundled payments increase overall Medicare spending. Only analyses of market-level volume like those conducted in our study can do so.

Weeks and Fisher also question our findings related to case-mix changes, noting results from secondary analyses comparing BPCI participant hospitals with all nonparticipant hospitals. Doubtless there are inherent limitations of claims data in identifying patient characteristics that might drive case-mix selection. However, BPCI participant hospitals are hardly representative of hospitals nationwide. Instead, they are more likely than nonparticipant hospitals to be high-volume, not-for-profit, teaching institutions.³ In view of these differences, propensity-matched comparisons provide stronger, albeit not

definitive, evidence compared with the non-propensity-matched comparisons referenced by Weeks and Fisher.

Overall, 3 important points need emphasizing. First, our study provides important evidence for informing bundled payment policy. Nevertheless, ongoing monitoring of the effect of policy on episode volume and potential selection of healthier patients is needed, especially with the expansion of LEJR bundles in BPCI Advanced.⁴ Second, our study also suggests that future work on voluntary payment programs should leverage more sophisticated methods to address potential selection bias based on unobservable patient characteristics and the effect on patient case mix. Third, our findings highlight the importance of updating the collective understanding based on the best evidence available, rather than cherry picking data.

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