

In the United States, “Opt-Out” States Show No Increase in Access to Anesthesia Services for Medicare Beneficiaries Compared with Non-“Opt-Out” States

Eric C. Sun, MD, PhD,* Thomas R. Miller, PhD, MBA,† and Nicholas M. Halzack, MPH‡

In the United States, anesthesia care can be provided by anesthesiologists or nurse anesthetists. Since 2001, 17 states have exercised their right to “opt-out” of the federal requirement that a physician supervise the administration of anesthesia by a nurse anesthetist, with the majority citing increased access to anesthesia care as the rationale for their decision. By using Medicare data, we found that most (4 of 5) cohorts of “opt-out” states likely experienced smaller growth in anesthesia utilization rates compared with non-“opt-out” states, suggesting that opt-out was not associated with an increase in access to anesthesia care. (A&A Case Reports. 2016;XXX:00–00.)

In the United States, anesthesia care can be provided by anesthesiologists or nurse anesthetists. Typically, a nurse anesthetist must be supervised by a physician, usually an anesthesiologist, but sometimes the proceduralist. However, in 2001, the Executive Branch of the US Federal Government released a rule allowing states to “opt-out” of the federal requirement that a physician supervise the administration of anesthesia by a nurse anesthetist. Since its inception, 17 states have opted out with 10 specifying access to anesthesia care as being relevant to the “opt-out” decision. However, whether opting out has succeeded in increasing access has not been studied fully. To address this issue, we provide descriptive statistics regarding trends in the (population-adjusted) number of anesthetics in the US Medicare population among “opt-out” states compared with non-“opt-out” states. If opting out did increase access, one would expect to see relatively larger growth in the population-adjusted number of anesthetics in “opt-out” states compared with non-“opt-out” states.

METHODS

In the United States, Medicare is a public insurance program that provides health insurance for the elderly (persons aged 65 years or older) or younger persons with specific disabilities such as end-stage renal disease. In 2010, >80% of Medicare beneficiaries consisted of persons aged 65 years and older.^a As a general rule, Medicare beneficiaries can choose to either be enrolled in a traditional fee-for-service plan, for which Medicare is the primary payer, or they can

choose to be enrolled in a managed health care plan. Under the latter, Medicare essentially subcontracts out the provision of health care to private health insurers, who bear all the costs for an individual’s care. Approximately two-thirds of Medicare beneficiaries are enrolled in the traditional fee-for-service plan.^b

Our analysis used the US Medicare Physician Supplier Procedure Summary Master Files, which provide counts of the number of claims submitted on behalf of Medicare fee-for-service beneficiaries. Claim counts for fee-for-service beneficiaries can be stratified by Current Procedural Terminology® code^c (American Medical Association, Chicago, IL), place of service (e.g., hospital or ambulatory surgery center), and geographic location. By using those data, we obtained a count of the number of claims submitted with an anesthesia Current Procedural Terminology code (00100–01999, excluding 01996, a code used for catheter management) between 1998 and 2013 stratified by state.

In the United States, when an anesthesiologist directs a nurse anesthetist, each party submits a claim for the given anesthetic. Therefore, to avoid double-counting anesthetics, we limited claims to those with the billing modifiers AA (submitted when an anesthesiologist works alone), QX (submitted by a nurse anesthetist when he or she is medically directed by a physician), and QZ (submitted by a nurse anesthetist when he or she works without medical direction).^d On the basis of these counts, we then defined an “anesthesia utilization rate” as the number of anesthesia claims divided by the population aged 65 years and older, which we obtained from the US Census Bureau.^e An alternative method of calculating the anesthesia utilization rate

From the *Department of Anesthesiology, Pain and Perioperative Medicine, Stanford University, Stanford, California; and †American Society of Anesthesiologists, Schaumburg, IL.

Accepted for publication November 2, 2015.

Funding: Institutional.

Eric C. Sun acknowledges funding from a Mentored Research Training Grant from the Foundation for Anesthesia Education and Research. Thomas R. Miller and Nicholas M. Halzack worked for American Society of Anesthesiologists.

Address correspondence to Eric C. Sun, MD, PhD, Department of Anesthesiology, Pain and Perioperative Medicine, Stanford University, H3580 Stanford University Medical Center, Stanford, CA 94305. Address e-mail to esun1@stanford.edu.

Copyright © 2016 International Anesthesia Research Society
DOI: 10.1213/XAA.0000000000000293

^aSee <http://kff.org/medicare/fact-sheet/medicare-at-a-glance-fact-sheet/>. Accessed July 17, 2015.

^bSee <http://kff.org/medicare/state-indicator/enrollees-as-a-of-total-medicare-population/>. Accessed July 17, 2015.

^cAkin to International Classification of Disease codes, Current Procedural Terminology codes are used in the United States to identify specific procedures.

^dTo avoid double counting, we omitted claims with the modifiers QK and QY, which are submitted by the anesthesiologist when he or she medically directs a case.

^eUS Census Bureau (1998–2013 data). Population Estimates: State Tables. Available at: <http://www.census.gov/popest/index.html>. Accessed July 17, 2015.

Table 1. Medicare Anesthesia Utilization Rates for Hospitals and Ambulatory Surgery Centers by Year of “Opt-Out”

Cohort	States	Average anesthesia utilization rate (anesthetics/1000 persons)					
		“Opt-out” states			Non-“opt-out” states		
		3 y before “opt-out”	3 y after “opt-out”	Percentage change	3 y before “opt-out”	3 y after “opt-out”	Percentage change
2001	Iowa	194	225	16	210	276	32
2002	Idaho, Minnesota, Nebraska, New Hampshire, and New Mexico	191	225	18	217	274	26
2003	Alaska, Kansas, Oregon, and Washington	200	241	7	241	266	10
2005	Wisconsin	274	251	-9	276	263	-5
2009	California	157	165	5	263	273	4

The average anesthesia utilization rates in the 3 y before “opt-out” and the 3 y after “opt-out” for each of the “opt-out” cohorts (states that chose to “opt-out” is 2001, 2002, etc.) is shown. The equivalent values for non-“opt-out” states are also shown.

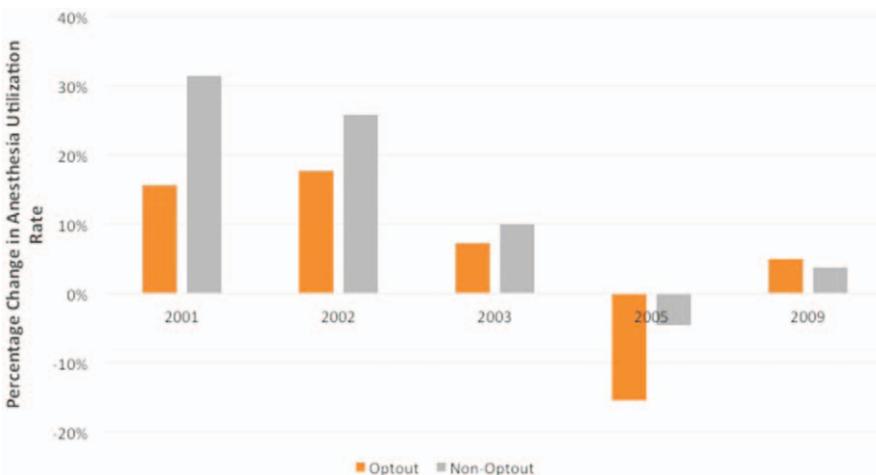


Figure 1. Change in 3-year average Medicare anesthesia utilization rates for hospitals and ambulatory surgery centers: before “opt-out” year to after “opt-out” year, compared with non-“opt-out” states. The change in anesthesia utilization rates in the 3 years after “opt-out” compared with the 3 years before “opt-out” for each of the “opt-out” cohorts (states that chose to “opt-out” is 2001, 2002, etc) is shown. The equivalent change for non-“opt-out” states is also shown.

would be to construct a measure based on the total number of units (base units plus time units) generated by a given case.^f We did not adopt this measure for 2 reasons. First, we did not have data on case length. Second, the number of anesthetics used in our analysis should closely correlate with any measure based on units.¹⁻⁴

There were 8 cohorts of “opt-out” states: states opting out in 2001 (Iowa), 2002 (Idaho, Minnesota, Nebraska, New Hampshire, and New Mexico), 2003 (Alaska, Kansas, North Dakota, Oregon, and Washington), 2004 (Montana), 2005 (Wisconsin and South Dakota), 2009 (California), 2010 (Colorado), and 2012 (Kentucky). For each cohort, we calculated the average annual anesthesia utilization rate in the 3 years before and the 3 years after “opt-out.” We then calculated the percentage change in the anesthesia utilization rate and compared this change against the change among non-“opt-out” states during the same time period. For example, for states opting out in 2002, we calculated average anesthesia utilization rate from 1999 to 2001 and the average anesthesia

utilization rate from 2003 to 2005. We then compared the (percentage) change in the anesthesia utilization rate between these 2 time periods and compared this against the equivalent change among non-“opt-out” states. We excluded Kentucky from this analysis because Kentucky opted out in 2012, and the last year of our data is 2013. We also excluded Colorado from the analysis because “opt-out” was not consistently applied across the state. Similarly, we excluded Montana because, although the state opted out in 2004, it reversed this decision in early 2005 and then reresetored “opt-out” in mid-2005. Finally, we excluded North and South Dakota because data for both these states were combined (and not able to be separated by state) until 2007; including these 2 states had no qualitative effect on our results.

RESULTS

Table 1 presents average anesthesia utilization rates in the 3 years before and after “opt-out” for each of the cohorts and the equivalent values for non-“opt-out” states, whereas Figure 1 plots the overall growth in anesthesia utilization rate across “opt-out” cohorts. For example, Iowa was the only state to “opt-out” in 2001. For the 3 years prior (1998–2000), the average anesthesia utilization rate was 194 anesthetics/1000 persons aged 65 years and older, which increased to 225 anesthetics/1000 persons in the 3 years after “opt-out” (2002–2004, 16% increase). By comparison, the average anesthesia utilization rate in non-“opt-out” states increased from

^fIn the United States, payment for a given anesthetic is determined by the total number of anesthesia units the case generates. A case generates a given number of base units, which is determined by the type of case—for example, in 2014, an anesthetic for a coronary artery bypass graft was assigned 18 base units, whereas an anesthetic for a total knee arthroplasty was assigned 7 base units. In addition, a case generates units based on the time spent by the anesthesiologist in providing care with 15 minutes of time generating 1 unit. Therefore, the total number of units generated is the sum of the base units and the number of units generated by time.

210 to 276 anesthetics/1000 persons (32% increase). Figure 1 shows that most (4 of 5) “opt-out” cohorts likely experienced smaller growth in anesthesia utilization rates compared with non-“opt-out” states with the sole exceptions being the 2009 cohort (California; 5% increase vs 4% for non-“opt-out” states).

DISCUSSION

Understanding how “opt-out” has affected access to anesthesia care can be difficult because many sources of data that could be used to measure access are expensive or otherwise difficult to obtain. To preliminarily explore whether “opt-out” was successful in increasing access, we examined gross trends in the anesthesia utilization rate (population-adjusted number of anesthetics) among US Medicare beneficiaries in “opt-out” states compared with non-“opt-out” states. Overall, we found that most (4 of 5) “opt-out” cohorts likely experienced smaller growth in anesthesia utilization rates compared with non-“opt-out” states, suggesting that “opt-out” was not associated with an increase in access to anesthesia care. We caution that our results are preliminary and are simply a first pass at this issue, particularly because

they are descriptive and limited to the fee-for-service Medicare population. Moreover, it is possible that “opt-out” could have increased access in rural areas so that cases previously performed in urban areas are now being done in rural areas. In this scenario, the total number of cases at the state level could remain unchanged, even with an increase in access in rural areas. Further studies should more carefully characterize the significance (statistical and clinical) of any changes in access to anesthesia care associated with “opt-out” and could also consider the effects of “opt-out” among other populations such as patients with Medicaid or private insurance. ■■

REFERENCES

1. Masursky D, Dexter F, Nussmeier NA. Operating room nursing directors' influence on anesthesia group operating room productivity. *Anesth Analg* 2008;107:1989-96
2. O'Neill L, Dexter F, Wachtel RE. Should anesthesia groups advocate funding of clinics and scheduling systems to increase operating room workload? *Anesthesiology* 2009;111:1016-24
3. Bayman EO, Dexter F, Laur JJ, Wachtel RE. National incidence of use of monitored anesthesia care. *Anesth Analg* 2011;113:165-9
4. Dexter F, Masursky D, Ledolter J, Wachtel RE, Smallman B. Monitoring changes in individual surgeon's workloads using anesthesia data. *Can J Anaesth* 2012;59:571-7