Anesthesiologists Are Affiliated with Many Hospitals Only Reporting Anesthesia Claims Using Modifier QZ for Medicare Claims in 2013

Thomas R. Miller, PhD, MBA,* Amr Abouleish, MD, MBA,† and Nicholas M. Halzack, MPH*

We examined hospitals that exclusively used the billing modifier QZ in anesthesia claims for a 5% sample of Medicare beneficiaries in 2013. We used a national Medicare provider file to identify physician anesthesiologists and nurse anesthetists affiliated with these hospitals. Among the 538 hospitals that exclusively reported the modifier QZ, 47.5% had affiliated physician anesthesiologists. These hospitals accounted for 60.4% of the cases. Our results illustrate the challenges of using modifier QZ to describe anesthesia practice arrangements in hospitals. The modifier QZ does not seem to be a valid surrogate for no anesthesiologist being involved in the care provided. (A&A Case Reports. 2015;XXX:00–00.)

Since its introduction in 1993, the billing modifier QZ was defined by the Centers for Medicare & Medicaid Services (CMS) to be used for "CRNA service: without medical direction by a physician." Nurse anesthetists can bill using either the modifiers QZ or QX ("CRNA service with medical direction by an anesthesiologist").[1,2] At least 2 studies of surgical outcomes have instead used the modifier QZ to represent "a nurse anesthetist working without the supervision of a physician,"[3,4] which is different from the CMS billing definition. In addition, because the modifier QZ requires less documentation and does not decrease payment (Table 1), some anesthesiology practices where the group employs the nurse anesthetist have chosen to report modifier QZ in cases in which a physician anesthesiologist supervised the nurse anesthetist.[5] Similarly, in group practices, the use of the modifier QZ may simply represent incomplete medical direction or incomplete documentation of medical direction. Although it is possible that a nurse anesthetist would be practicing independently of an anesthesiologist, in situations in which an anesthesiologist is also at the hospital, it is likely that there is a formal working relationship with the anesthesiologist(s) that may include collaboration, consultation, supervision, and/or direction.

In this management and education report of hospitals that exclusively billed anesthesia care with modifier QZ, we examined whether QZ can be used to identify care that was provided without any anesthesiologist involvement or whether anesthesiologists were affiliated with these hospitals and provided care that is not represented in the administrative billing database.

CASE DESCRIPTION

The subject of this management and education report is the subset of hospitals reporting the billing modifier QZ in 100% of their anesthesia claims for a sample of Medicare beneficiaries. To create this subset, we first identified anesthesia services using the 2013 Medicare Physician/Supplier Part B 5% Limited Data Set Standard Analytical File (SAF). We defined an anesthesia case as a unique patient–date combination of claims in which at least 1 claim included an Anesthesia Current Procedural Terminology code (excluding 01996, daily hospital management of epidural or subarachnoid continuous drug administration). We then matched the anesthesia case to a specific facility based on the beneficiary identification number and date of service using the Medicare Inpatient and Outpatient 5% SAFs. We then limited the set of facilities to include only short-term acute care, children's, and critical access hospitals, thereby excluding psychiatric, long-term, rehabilitation, and skilled nursing facilities. By design, the Inpatient and Outpatient SAFs exclude most ambulatory surgery centers unless organized as a department of a hospital. Selected characteristics for the resulting set of hospitals were obtained from the American Hospital Association's Annual Survey for 2013.[a]

This method yielded 355,433 matched anesthesia cases within 3989 hospitals in the 2013 Medicare 5% SAFs. Of these hospitals, 2343 (58.7%) had at least 1 case reporting the modifier QZ and the hospitals accounted for 209,089 cases (58.8% of total matched cases). Among the hospitals with at least 1 QZ case, 538 (23.0%) had 100% of their anesthesia cases reporting the modifier QZ and that represented 9071 cases (4.3% of cases in hospitals with at least 1 QZ case). We compared hospitals with 100% of their anesthesia cases reporting the modifier QZ with the rest of the sample and examined χ^2 test statistics for characteristics based on the proportions and median 2-sample test statistics for the characteristics reported as medians. The hospitals with all their cases reporting the modifier QZ had significantly (P <0.001) fewer beds, cases, and surgeries compared with all other hospitals or the subset of other hospitals with at least 1 QZ case. In addition, the 100% QZ hospitals had a significantly larger percentage of critical access hospitals (P <0.001).

From the *American Society of Anesthesiologists, Schaumburg, Illinois; and †Department of Anesthesiology, The University of Texas Medical Branch, Galveston, Texas.

Accepted for publication June 3, 2015.

Funding: American Society of Anesthesiologists.

Thomas R. Miller and Nicholas Halzack work for American Society of Anesthesiologists. Amr Abouleish declares no conflicts of interest.

Reprints will not be available from the authors.

Address correspondence to Thomas R. Miller, PhD, MBA, American Society of Anesthesiologists, 1061 American Ln., Schaumburg, IL 60173. Address e-mail to t.miller@asahq.org.

DOI: 10.1213/XAA.0000000000000223

[a]For 9 of 17 hospitals with missing data in the American Hospital Association's Annual Survey, we obtained estimates of surgical volume from the American Hospital Directory®. Available at: http://www.ahd.com. Accessed March 13, 2015.

We used the March 2014 Physician Compare National Downloadable File (Physician Compare file) to identify physician anesthesiologists' and nurse anesthetists' affiliations with hospitals based on the first specialty listed. According to CMS, it may take between 3 and 6 months for providers to be added to the Physician Compare file after participating in Medicare. Therefore, this file should be the representative of anesthesia providers and their hospital affiliations in 2013.

The Physician Compare file included information for physician anesthesiologists and nurse anesthetists affiliated with 486 of the 538 hospitals reporting 100% claims with the modifier QZ. The 52 missing hospitals are described in the Discussion. For approximately half of the anesthesia providers, a physician anesthesiologist or nurse anesthetist was affiliated with multiple hospitals. For purposes of estimating provider counts, we divided and allocated 1 provider equally across his or her affiliated hospitals (e.g., if a physician was affiliated with 4 hospitals, each hospital was allocated 0.25 physicians).

For hospitals reporting cases with only the modifier QZ, Table 2 presents the distribution of hospitals and cases based on the ranges of per-hospital case volume for the Medicare 5% sample. In addition, the percentage of hospitals with affiliated anesthesiologists is presented by range of cases along with the median number of physician anesthesiologists and ratio of nurse anesthetists to physician anesthesiologists. Fifty hospitals (19.3%) represented almost 60% of the cases in the analytic sample. The number of affiliated physician anesthesiologists was very weakly correlated with the number of anesthesia cases within a hospital (Kendall $\tau = 0.115$, $P < 0.001$).

Table 3 presents selected characteristics of hospitals that reported the modifier QZ in 100% of the cases in the Medicare 5% sample and that were identified as having anesthesia providers based on the Physician Compare file. Almost half (47.5%) of the hospitals had an affiliated physician anesthesiologist, and it seems likely that the physician anesthesiologists were involved in patient care and had some relationship with nurse anesthetists practicing at the hospitals. Hospitals without affiliated physician anesthesiologists were more likely to be located in an opt-out state, be designated as a critical access hospital, have fewer cases and surgeries, and have a lower case mix index than hospitals with an affiliated physician anesthesiologist. We calculated the case mix index presented in Table 3 based on the weight of the diagnosis-related group for each of the matched inpatient cases for each hospital.

DISCUSSION

By using a CMS national provider file, we identified physician anesthesiologists affiliated with the hospitals representing >60% of the cases where the modifier QZ is always billed. This situation is consistent with the physician anesthesiologist having a practice relationship with the nurse anesthetist, even when the modifier QZ is used and physician contribution to care is not represented in the administrative billing database. Because the physician work

Table 1. Medicare Billing Modifier and Payment for Anesthesia Services Provided by a Nonphysician Anesthetist[a]

Modifier	Description	Payment as percentage of allowable amount		
		To nonphysician anesthetist (%)	To anesthesiologist who medically directed care (%)	Total to group (%)[b]
QX	CRNA/AA service with medical direction by a physician	50	50	100
QZ	CRNA service without medical direction by a physician	100	Not applicable	100

Adapted from Ref. 2.

AA = anesthesiologist assistant; CRNA = certified registered nurse anesthetist.

[a]Nonphysician anesthetist is defined in Centers for Medicare and Medicaid Services payment rules as CRNA or AA.

[b]If the providers assign payment to the group, the payment is made to the group. Medical direction by a physician must meet 7 requirements and be only 1 to 4 concurrent cases. If requirements are not met or >4 concurrent rooms, then medical direction was not provided by the physician.

Table 2. Availability of Physician Anesthesiologists by Range of Reported Anesthesia Medicare Cases in Hospitals with 100% QZ Cases, 2013, by Nurse Anesthetists

Case[a]	Hospitals	Cases[a]	Hospitals with physician ANs[b]		
	n (Cumulative %)	*n* (Cumulative %)	Hospitals (%)	ANs per hospital, median (IQR)[c]	Ratio of nurses to physicians, median (IQR)[c]
70+	12 (2.5)	1854 (20.6)	83.3	5.33 (3.67)	3.47 (1.74)
45–69	32 (9.1)	1754 (40.1)	53.1	0.50 (1.00)	8.62 (6.50)
30–44	50 (19.3)	1748 (59.6)	58.0	0.25 (0.30)	14.11 (12.0)
17–29	89 (37.7)	1920 (80.9)	52.8	0.50 (0.50)	7.04 (10.0)
10–16	71 (52.3)	906 (91.0)	47.9	0.50 (0.37)	3.00 (5.47)
1–9	232 (100.0)	810 (100.0)	40.5	0.50 (0.78)	2.00 (5.43)
Total	486	8992	47.5	0.50 (0.75)	4.36 (7.29)

Anesthesia provider information was unavailable for 64 of the 100% QZ hospitals, so those hospitals were excluded from the table.

ANs = anesthesiologists; IQR = interquartile range.

[a]Based on the data from Medicare Standard Analytical File 5% Limited Data Set. Therefore, the actual number of anesthesia-related Medicare cases would be approximately 20 times the number shown.

[b]Based on the data from Medicare Physician Compare National Downloadable File (March 2014).

[c]For those hospitals with at least 1 affiliated physician anesthesiologist.

Table 3. Characteristics of Hospitals Reporting Only QZ Billing Modifiers in Anesthesia Medicare Cases in 2013

Hospital characteristics	Hospitals with affiliated physician anesthesiologists[a]	Hospitals without affiliated physician anesthesiologists[a]	*P* value[b]
n	231	255	—
Percentage of hospitals	47.5	52.5	—
Percentage of total cases[c]	60.4	39.6	—
Median number of physician anesthesiologists[a]	0.5 (0.75)	0 (0)	<0.001
Median number of nurse anesthetists[a]	2.3 (2.83)	2 (2.33)	0.056
Median bed size[d]	35 (44)	33 (36)	0.546
CAH designation (%)[d]	45.8	58.3	0.007
Teaching hospital (%)[e]	10.8	7.8	0.159
Median number of Medicare cases[c]	14 (25)	8 (16)	0.006
Median CMI[c,f]	2.00 (0.70)	1.77 (0.79)	0.039
Median total surgeries[g]	1464 (1403)	1243 (1360)	0.017

Number in parentheses is the interquartile range. Anesthesia provider information was unavailable for 52 of the 100% QZ hospitals, so those hospitals were excluded from the table.

AAMC = Association of American Medical Colleges; ACGME = Accreditation Council for Graduate Medical Education; CAH = Critical Access Hospital; CMI = case mix index; DRG = Diagnosis-Related Group.

[a]Based on the data from Medicare Physician Compare.

[b]Based on the χ^2 test statistic for critical access hospital designation, Teaching hospital and In an opt-out state and based on the median 2-sample 2-sided test statistic for characteristics with median values shown. Significance was similar across a broad array of test statistics.

[c]Based on the data from Medicare Standard Analytical File 5% Limited Data Set. Therefore, the actual number of anesthesia-related Medicare cases would be approximately 20 times the number shown.

[d]Based on the data from the American Hospital Association Annual Hospital Survey. Seventeen hospitals had missing data.

[e]Includes major and minor teaching hospitals based on the data from the American Hospital Association Annual Hospital Survey. Major teaching hospitals are hospitals that belong to the Council of Teaching Hospitals of the AAMC. Minor teaching hospitals are those either approved to participate in residency and/or internship training by the ACGME or those with medical school affiliation reported to the AMA.

[f]For hospitals with affiliated physician anesthesiologists, 45 hospitals had only outpatient cases or an invalid DRG and no DRG weight could be included in the case mix index calculation. For hospitals without affiliated physician anesthesiologists, 46 hospitals had only outpatient cases or an invalid DRG and no DRG weight could be included in the case mix index calculation.

[g]Based on the data from the American Hospital Association Annual Hospital Survey or American Hospital Directory (9 hospitals). There were missing data for 3 hospitals with affiliated physician anesthesiologists and 5 hospitals without affiliated physician anesthesiologists.

is not represented in the claims data, it is not possible to determine what this practice relationship is for each claim. This practice relationship may range from collaboration to incomplete medical direction. In addition, in some hospitals, the physician anesthesiologist's role is that of clinical manager for anesthesia services or perioperative medical director. In this function, the physician anesthesiologist is present daily as a manager and may even be involved in teaching the nurse anesthetists. However, it would be rare that the anesthesiologist as manager would submit a bill.

In the Medicare 5% sample, 1805 hospitals had at least 1 claim but <100% of the claims with the modifier QZ. Anesthesia billing modifiers used in these hospitals must include those that reflect a team model and/or those that denote physician anesthesiologists personally performing the anesthesia service. In these hospitals with multiple billing modifiers, it is likely that the cases with the QZ modifier are in a setting where there is availability, oversight, supervision, or incomplete medical direction on the part of physician anesthesiologists. It is important to note that the limitations of using the administrative claims database to determine anesthesia staffing in QZ claims is not because of inaccuracy of coding but because of a result of Medicare billing modifier definitions.

A key limitation to the analysis presented in this management and education report is that it is based on a single payer, Medicare, and a 5% sample of its beneficiaries. In addition, not all the hospitals in the Medicare-matched claims were identified in the national provider file. The 52 missing hospitals represented 9.7% of the hospitals reporting only the modifier QZ, but only 0.9% of the cases. Despite these limitations, this management and education report illustrates the challenge of using Medicare claims data to describe anesthesia practice settings.

At least 2 studies of inpatient surgical outcomes have incorrectly used the modifier QZ to represent "nurse anesthetists practicing solo, working without supervision or working independently of a physician,"[3,4] although that is not the CMS billing definition and differs from actual practice. This calls into question the construct validity of the variable these studies used to identify the anesthesia care model for Medicare patients.

REFERENCES

1. Centers for Medicare & Medicaid Services. 2013 Alpha-Numeric HCPCS File. Available at: http://www.cms.gov/Medicare/Coding/HCPCSReleaseCodeSets/Alpha-Numeric-HCPCS-Items/2013-Alpha-Numeric-HCPCS.html?DLPage=1&DLSort=0&DLSortDir=descending. Accessed March 17, 2014
2. Centers for Medicare and Medicaid Services. Medicare Claims Processing Manual, Chapter 12 Section 50(K) Anesthesia Claims Modifiers (Rev. 3096, 10-17-14).
3. Dulisse B, Cromwell J. No harm found when nurse anesthetists work without supervision by physicians. Health Aff (Millwood) 2010;29:1469–75
4. Pine M, Holt KD, Lou YB. Surgical mortality and type of anesthesia provider. AANA J 2003;71:109–16
5. Byrd JR, Merrick SK, Stead SW. Billing of anesthesia service and the QZ modifier: a lurking problem. ASA Newsl 2011;75:36–8