Department of Health and Human Services

OFFICE OF INSPECTOR GENERAL

QUESTIONABLE BILLING FOR MEDICARE ELECTRODIAGNOSTIC TESTS

Daniel R. Levinson
Inspector General

April 2014
OEI-04-12-00420

EXECUTIVE SUMMARY: Questionable Billing for Medicare Electrodiagnostic Tests
OEI-04-12-00420

WHY WE DID THIS STUDY

In 2011, Medicare paid approximately $486 million to 21,700 physicians who billed for electrodiagnostic tests for 877,000 beneficiaries. Electrodiagnostic tests are used to evaluate patients who may have nerve damage. Recent investigations have found that electrodiagnostic testing is an area vulnerable to fraud, waste, and abuse. For example, in 2011, following work by the Medicare Fraud Strike Force, a group of physicians was charged with fraudulently billing Medicare $113 million for false claims, including claims for electrodiagnostic tests. The Centers for Medicare & Medicaid Services (CMS) issues comparative billing reports to providers for a variety of services, including electrodiagnostic testing. Such reports are intended to proactively educate providers and to help them identify and correct errors in their billing.

HOW WE DID THIS STUDY

We developed seven measures of questionable billing on the basis of past Office of Inspector General work and input from CMS staff. We analyzed Medicare 2011 electrodiagnostic test claims to identify physicians who had unusually high billing for at least one of these measures. We also determined whether physicians with questionable billing for electrodiagnostic tests received comparative billing reports in 2011 for such tests. Finally, we identified the geographical areas with the highest amounts of questionable billing.

WHAT WE FOUND

In 2011, 4,901 physicians had questionable billing for Medicare electrodiagnostic tests totaling $139 million. Additionally, we found that approximately 20 percent of these physicians received comparative billing reports in 2011 on the basis of their 2010 billing for electrodiagnostic tests. Finally, physicians in the New York, Los Angeles, and Houston areas had the highest total questionable billing for Medicare electrodiagnostic tests in 2011.

WHAT WE RECOMMEND

We recommend that CMS (1) increase its monitoring of billing for electrodiagnostic tests, (2) provide additional guidance and education to physicians regarding electrodiagnostic tests, and (3) take appropriate action regarding physicians whom we identified as having inappropriate or questionable billing. CMS partially concurred with our first two recommendations and concurred with the third one.

TABLE OF CONTENTS

OBJECTIVES

To determine the extent to which:

1. physicians exhibited questionable billing for electrodiagnostic tests in 2011, and
2. questionable billing by physicians varied by geographical location.

BACKGROUND

Recent investigations have found that electrodiagnostic testing is an area vulnerable to fraud, waste, and abuse. For example, in 2011, the Medicare Fraud Strike Force charged a group of physicians in two cities with fraudulently billing Medicare $113 million for false claims, including claims for electrodiagnostic tests.[1] Further, the growth of Medicare spending on electrodiagnostic testing has outpaced the growth in overall Medicare spending in recent years. From 2002 to 2011, spending for electrodiagnostic testing under Medicare Part B increased 74 percent, from $279 million to $486 million.[2] In comparison, during the same timeframe, overall Medicare spending for Part B items and services increased 50 percent.[3]

Overview of Electrodiagnostic Tests

Electrodiagnostic tests are used to evaluate patients who may have nerve damage. These specialized tests measure the electrical activity of the muscles and nerves and detect abnormalities of the peripheral nervous system (i.e., nerves outside the brain and spinal cord).

Several conditions, including diabetes and carpal tunnel syndrome, can cause peripheral nerve damage. Two common electrodiagnostic tests to

[1] The Detroit, MI, cases involve $23 million in false Medicare claims for home health care, nerve conduction tests, psychotherapy, physical therapy and podiatry. The Brooklyn, NY, cases involve $90 million in false Medicare billings for physical therapy, proctology services and nerve conduction tests. Department of Justice, *Medicare Fraud Strike Force Charges 111 Individuals for More Than $225 Million in False Billing and Expands Operations to Two Additional Cities*. Accessed at http://www.justice.gov/opa/pr/2011/February/11-ag-202.html on June 8, 2012.

[2] In 2011, Medicare spending on electrodiagnostic tests represented approximately 0.4 percent ($486 million of $126 billion) of all Medicare Part B spending. Health and Human Services (HHS) Office of Inspector General (OIG) analysis of 2002 and 2011 Part B Analytics Reports (PBAR) National Procedure Summary File.

[3] Ibid.

assess nerve damage are nerve conduction tests (NCT) and needle electromyography tests (EMG).[4]

NCTs. NCTs are noninvasive procedures used to evaluate muscle or nerve damage. Standard NCTs include a stimulus that delivers a small electrical current to the patient's skin near the nerves being tested, causing the nerves to respond. The electrical signals produced by nerves and muscles are typically recorded and interpreted by a physician specifically trained in electrodiagnostic medicine. Results from NCTs provide information about the speed, size, and shape of the nerve in response to an electrical stimulus. Physicians typically test many different motor and sensory nerves to determine the presence of nerve damage.

Needle EMGs. Needle EMGs are invasive procedures that provide information about the function of the muscles and nerves in the body. Depending on the patient's symptoms, a needle is inserted into muscles in the arm, leg, neck, or back. For example, patients with lower back pain may experience nerve pain from herniated discs. In this case, a needle EMG can evaluate the severity of the nerve damage caused by disc herniations. Results from needle EMGs provide information about the integrity of the connection between a nerve and its muscle as well as the integrity of the muscle itself. Typically, physicians trained specifically in electrodiagnostic medicine perform and interpret the results from the needle EMG.

Typically, physicians perform NCTs along with needle EMGs to detect, measure and confirm the extent of nerve damage.[5,6] When performed together, these tests can determine the source of nerve pain and damage and whether such pain is related to peripheral nerve disease. However, when physicians use NCTs without integrating needle EMG findings, the results may be misleading, potentially causing important diagnoses to be missed.[7]

---

[4] American Association of Neuromuscular & Electrodiagnostic Medicine (AANEM), *Model Policy for Needle Electromyography and Nerve Conduction Studies*, December 2011. Accessed at http://www.aanem.org/getmedia/4258c924-358e-42ce-a64e-1c6a935f2e2e/Model_Policy_NCS_EMG_12312011.pdf.aspx on June 7, 2012.

[5] AANEM, *Proper Performance and Interpretation of Electrodiagnostic Studies*, January 2006. Accessed at http://www.aanem.org/getmedia/9b4fa3d5-c127-4c3d-9296-b650e443b2cc/ProperPerformance.pdf.aspx on July 2, 2012.

[6] Needle EMGs are optional when diagnosing carpal tunnel syndrome. American Association of Electrodiagnostic Medicine (now AANEM), *Practice Parameter for Electrodiagnostic Studies in Carpal Tunnel Syndrome: Summary Statement*, June 2002. Accessed at http://www.aanem.org/getmedia/7ddc9ef9-ee91-4b48-9c1a-53454313001e/CTS.pdf.aspx on December 23, 2013.

[7] Ibid.

Medicare Payment for Electrodiagnostic Tests

Medicare Part B pays for electrodiagnostic tests that are medically reasonable and necessary, and performed by physicians or by licensed, certified nonphysician personnel under appropriate physician supervision.[8, 9] Further, Medicare requires that diagnostic tests, including electrodiagnostic tests, be ordered by a physician or other qualified nonphysician practitioner who treats a Medicare patient for a specific medical problem and who uses the results of those tests to manage the patient's medical condition.[10]

The Medicare fee schedule for physicians sets payment rates for electrodiagnostic tests on the basis of the location where the physician performed the service.[11] In 2011, Medicare's payment amounts for NCTs ranged from $46 to $84 and its payment amounts for needle EMGs ranged from $57 to $174.

Medicare Claims Processing and Program Safeguards

The Centers for Medicare & Medicaid Services (CMS) uses local contractors, known as Medicare Administrative Contractors (MAC) to manage payments for Part B services. CMS and its contractors develop guidance and implement program safeguards to ensure the integrity of these services. For example, MACs can develop local coverage determinations (LCDs) that establish billing and coding guidelines in their coverage areas when there is no National Coverage Determination (NCD) or when there is a need to further define an NCD. To illustrate, MACs can establish LCDs that set utilization limits or clinical requirements for specific types of electrodiagnostic test claims in their coverage areas. These coverage rules can vary across MAC jurisdictions.[12]

Additionally, LCDs inform physicians as to the correct use of modifiers and diagnoses on a claim. For example, some LCDs state that modifier 59 should be added to a claim if the physician is conducting needle EMG

---

[8] Social Security Act § 1862(a)(1)(A), 42 U.S.C. § 1395y(a)(1)(A).

[9] Medicare does not pay for electrodiagnostic services performed by chiropractors. 42 CFR § 410.21(b)(2); CMS, *Medicare Benefits Policy Manual*, Pub. No. 100-02, ch. 15, § 30.5.

[10] 42 CFR § 410.32.

[11] Social Security Act § 1848, 42 U.S.C. 1395w-4. The Medicare physician fee schedule is derived using a resource-based relative value scale, which includes three resource components: (1) total physician work, (2) practice expenses, and (3) malpractice expenses. These payment rates are based on relative value units, adjusted for geography, and multiplied by a national conversion factor to derive dollar amounts.

[12] CMS, *A/B MAC Jurisdictions.* Accessed at http://www.cms.gov/Medicare/Medicare-Contracting/MedicareContractingReform/PartAandPartBMACJurisdictions.html on June 22, 2012. All 12 A/B MAC jurisdictions were operational as of September 2013.

testing on more than one limb during the same day.[13] Further, since physician exams are typically performed with electrodiagnostic tests, some LCDs state that modifier 25 should be added to a claim if a separate, identifiable physician visit is billed by the same physician on the same day.

CMS also uses what it calls "medically unlikely edits" (MUEs) to reduce the paid-claims error rate for Part B claims. For example, an MUE may establish the maximum units of service for which a physician can bill under most circumstances for a single patient on the same day.[14] In 2011, CMS had an MUE stating that the maximum "units of service" (in this case, the maximum number of tests) for a single NCT (procedure code 95905) were two tests for a patient on the same day.[15, 16]

Further, MACs may adopt practice guidelines developed by medical organizations to determine whether Medicare will cover an electrodiagnostic service. For example, several MACs have adopted AANEM guidelines stating that a needle EMG should be performed by a physician with special training in electrodiagnostic medicine, usually a physiatrist or neurologist.[17] Physiatrists and neurologists receive formal

---

[13] Modifiers 25 and 59 are used to identify procedures that are typically not separately payable to make them eligible for separate payment. Under certain circumstances, it may be appropriate for these procedures to be paid for separately. For example, modifier 25 is used to indicate that a distinct evaluation and management (E/M) service was performed by the same physician on the same day as an NCT or needle EMG. Modifier 59 is used to indicate that a distinct, non-E/M service was performed by the same physician on the same day as an NCT or needle EMG at a different session, at a different anatomical site, or on a different organ system.

[14] An edit is an automated system process to ensure proper payment of claims. An MUE flags claims for services or combinations of services that are unlikely to be medically appropriate. CMS, *Medically Unlikely Edits*. Accessed at http://www.cms.gov/Medicare/Coding/NationalCorrectCodInitEd/MUE.html on June 20, 2012.

[15] Not all procedure codes have an MUE. Units of service for procedure code 95905 are based on each extremity (i.e., limb) tested, whereas units of service for other NCT codes (e.g., 95900) are based on each nerve tested. AANEM has recommendations for the maximum number of electrodiagnostic tests considered reasonable to diagnose a patient's condition. In 2012, CMS worked with professional associations, including AANEM, to allow physicians to use revised CPT codes on claims that indicate the number of electrodiagnostic tests that were performed. However, CMS did not implement any edits to enforce AANEM recommendations about the number of tests.

[16] **The five character codes and descriptions included in this report are obtained from Current Procedural Terminology (CPT®), copyright 2012 by the American Medical Association (AMA). CPT is developed by the AMA as a listing of descriptive terms and five character identifying codes and modifiers for reporting medical services and procedures. Any use of CPT outside of this design should refer to the most current version of the Current Procedural Terminology available from AMA. Applicable FARS/DFARS apply.**

[17] AANEM, *Who is Qualified to Practice Electrodiagnostic Medicine?* May 1999. Accessed at http://www.aanem.org/getmedia/f96400ac-6534-4f9f-bddc-21231e241e0c/who_is_qualified.PDF.aspx on June 6, 2012.

training in the diagnosis and treatment of neuromuscular diseases, and they are trained in the administration and interpretation of electrodiagnostic tests. Providers who are generally not considered to have special training in nerve disorders include primary care physicians, internists, chiropractors, orthopedists, podiatrists, and dermatologists.[18, 19]

Additionally, CMS produces comparative billing reports (CBRs) for Part B items and services to help physicians prevent future improper billings and payments.[20] These reports compare physicians' billing and payment patterns to those of their peers in their respective States and across the Nation.[21] As of November 2013, CMS's contractor had issued initial CBRs on eight topics, including electrodiagnostic testing. The contractor had also issued followup CBRs on four of those eight topics, but it had not issued one on electrodiagnostic testing. The purpose of a followup CBR is to present comparisons to the providers who received the initial CBR; the followup CBR uses more recent data. In the CBR for electrodiagnostic testing, the measures of analysis were (1) the average number of services paid per beneficiary for NCTs and needle EMGs, (2) the amount paid to the provider for NCTs and needle EMGs, and (3) the percentage of NCTs paid for without a needle EMG on the same claim.

Related Office of Inspector General Work

This is OIG's first evaluation on electrodiagnostic tests. However, previous OIG work has documented growth in other types of diagnostic imaging tests covered under Medicare Part B and has raised concerns about the appropriateness of those services.[22, 23] For example, OIG

---

[18] AANEM, *Model Policy for Needle Electromyography and Nerve Conduction Studies*, December 2011. AANEM policy states that nonphysicians, such as physical therapists, chiropractors, and physician assistants, do not have appropriate training and knowledge to perform and interpret NCTs and needle EMGs, although they may perform NCTs under direct physician supervision.

[19] The American Board of Electrodiagnostic Medicine (ABEM), an independent credentialing body established by AANEM, administers an annual examination to evaluate the specialized knowledge and abilities of technologists trained in NCTs. AANEM, *AANEM News*. Accessed at http://www.aanem.org/getmedia/9970eb4f-fd3b-4fff-961f-963b238390be/16.pdf.aspx on July 3, 2012.

[20] Safeguard Services, LLC, *CBR011–020 Frequently Asked Questions*. Accessed at http://www.safeguard-servicesllc.com/cbr/faqs2.asp#cbr011 on June 5, 2012. CMS, through Safeguard Services, issued a comparative billing report for electrodiagnostic tests in December 2011 to a sample of 4,241 physicians. The sample typically excludes neurologists, physiatrists, and independent diagnostic testing facilities. The results of physicians' CBRs are not publicly available.

[21] Safeguard Services, LLC, *Comparative Billing Report Services Overview*. Accessed at http://www.safeguard-servicesllc.com/cbr/default.asp on June 5, 2012.

[22] OIG, *Growth in Advanced Imaging Paid Under the Medicare Physician Fee Schedule*, OEI-01-06-00260. October 2007.

[23] OIG, *Medicare Part B Billing for Ultrasound*, OEI-01-08-00100. July 2009.

identified 20 counties that accounted for $336 million in questionable billing on ultrasound services in 2007. CMS concurred with OIG's recommendation for it to monitor ultrasound claims data to detect questionable billing and take action when physicians bill for high numbers of questionable claims for ultrasound services.

Additionally, OIG determined the extent to which use of modifier 25 (i.e., billing for a significant, separately identifiable evaluation and management (E/M) service by the same physician on the same day as another procedure) met Medicare program requirements in 2002.[24] Of the 450 claims with modifier 25 selected for medical review, 35 percent did not meet program requirements.

Further, OIG determined whether providers used modifier 59 (i.e., billing for a significant, separately identifiable *non*-E/M service by the same physician on the same day as another procedure) inappropriately during fiscal year 2003.[25] Of the 350 claims with modifier 59 selected for medical review, 40 percent did not meet program requirements. CMS concurred with OIG's recommendations for it to work with its contractors to reduce the number of claims submitted using modifiers 25 and 59 that do not meet program requirements.

METHODOLOGY

Data Collection and Analysis

We analyzed 2011 electrodiagnostic claims from 100-percent paid claims from CMS's National Claims History (NCH) Carrier File. We analyzed approximately 3 million claims for NCTs and needle EMGs billed by 21,663 physicians in 2011. We also analyzed all of these physicians' 2011 Part B claims from CMS's NCH Carrier File.

Identification of Physicians With Questionable Billing

We developed seven measures of questionable billing on the basis of past OIG work and fraud investigations related to electrodiagnostic tests, as well as input from CMS staff and AANEM.[26] We considered a physician's billing to be unusually high, or questionable, on each of the seven measures if it was greater than the 75th percentile plus 1.5 times the

[24] For example, see OIG, *Use of Modifier 25*, OEI-07-03-00470. November 2005.

[25] For example, see OIG, *Use of Modifier 59 to Bypass National Correct Coding Initiative Edits*, OEI-03-02-00771. November 2005.

[26] We also analyzed electrodiagnostic test payments that were made inappropriately to 211 physicians because on the corresponding claims, the physicians did not list diagnosis codes that covered electrodiagnostic services. These claims totaled $92,464 (or 0.02 percent) of the total Medicare-allowed amounts for electrodiagnostic tests in 2011. We will refer these physicians to CMS for appropriate action.

interquartile range.[27] Although some of this billing may be legitimate, physicians who have an unusually high amount of questionable billing warrant further scrutiny.

We classified physicians into two groups on the basis of their specialty to ensure that physicians' billing was compared to that of their peers. That is to say, we accounted for individuals who have special training in electrodiagnostic medicine, and therefore may see more patients who require electrodiagnostic testing, and may bill for more of these tests. One group consisted of neurologists and physiatrists, and the second group consisted of the remaining physicians in other specialties.[28] In 2011, Medicare paid $373 million to 11,292 neurologists and physiatrists for electrodiagnostic tests. Additionally, in 2011, Medicare paid approximately $113 million to 10,371 physicians in other specialties for electrodiagnostic tests.

For each measure of questionable billing, we included physicians whom Medicare paid for five or more electrodiagnostic tests.[29] We also calculated the Medicare payment for each physician's claim that was associated with questionable billing. The seven measures of questionable billing we developed were:

Physicians with an unusually high percentage of electrodiagnostic test claims using modifier 59. For each physician, we determined the percentage of electrodiagnostic test claims that had modifier 59. This modifier is used to bill for a significant, separately identifiable non-E/M service by the same physician on the same day as another procedure. However, payments for both services are appropriate only under certain circumstances. Past OIG studies have found that some physicians and providers used this modifier to increase payments inappropriately.[30]

Physicians with an unusually high percentage of electrodiagnostic test claims using modifier 25. For each physician, we determined the percentage of electrodiagnostic test claims that had modifier 25. This

[27] This is a standard exploratory method for identifying members of a population with unusually high values on a given statistic compared to the rest of the population when no established benchmarks exist. For each measure of questionable billing, this method was used to establish separate thresholds for the two groups of physicians. See J. W. Tukey, *Exploratory Data Analysis*, Addison-Wesley, 1977.

[28] Chiropractors were analyzed separately to determine inappropriate billing, and we found that none received payment for electrodiagnostic tests in 2011.

[29] A total of 280 physicians with questionable billing billed for fewer than 5 electrodiagnostic tests in 2011. These physicians represented 5.35 percent of physicians with questionable billing and approximately $39,590 (or .008 percent) of the total Medicare-allowed amounts for electrodiagnostic tests in 2011.

[30] For example, see OIG, *Use of Modifier 59 to Bypass National Correct Coding Initiative Edits*, OEI-03-02-00771. November 2005.

modifier is used to bill for a significant, separately identifiable E/M service by the same physician on the same day as another procedure. However, payments for both services are appropriate only under certain circumstances. Past OIG studies have found that some physicians and providers used this modifier to increase payments inappropriately.[31]

Physicians with an unusually high percentage of electrodiagnostic test claims. For each physician who was not a neurologist or physiatrist, we determined the percentage of electrodiagnostic test claims compared to all of their other Part B items and service claims. High billing of electrodiagnostic tests by physicians in specialties other than neurology and physiatry is questionable because they may be overutilizing these tests to evaluate beneficiaries or billing for services that were never performed.

Physicians with an unusually high percentage of electrodiagnostic test claims that did not include both an NCT and a needle EMG test. For each physician, we determined the percentage of electrodiagnostic test claims that did not have both an NCT and a needle EMG on the same claim (i.e., claims that included one but not the other). High billing of electrodiagnostic tests with such claims is questionable because these two tests are typically performed together.[32] However, according to AANEM, needle EMGs are optional when diagnosing carpal tunnel syndrome.[33] Therefore, we did not count a physician's claims for an NCT performed without a needle EMG as questionable when the diagnosis code on the claim was carpal tunnel syndrome (i.e., International Classification of Disease Coding (ICD) 354.0).

Physicians with an unusually high average number of miles between the physicians' and beneficiaries' locations. For each physician, we determined the average number of miles between the physician's practice location and beneficiaries' mailing addresses. Physicians with an unusually high average number of miles between the two are questionable because they may be billing for services that were not medically necessary or were never performed.

Physicians with an unusually high percentage of beneficiaries for whom at least three physicians billed Medicare for electrodiagnostic tests. For each physician, we determined the percentage of beneficiaries for whom at

---

[31] For example, see OIG, *Use of Modifier 25*, OEI-07-03-00470. November 2005.

[32] AANEM, *Proper Performance and Interpretation of Electrodiagnostic Studies*, January 2006. Accessed at http://www.aanem.org/getmedia/9b4fa3d5-c127-4c3d-9296-b650e443b2cc/ProperPerformance.pdf.aspx on July 2, 2012.

[33] AANEM, *Practice Parameter for Electrodiagnostic Studies in Carpal Tunnel Syndrome: Summary Statement*, June 2002. Accessed at http://www.aanem.org/getmedia/7ddc9ef9-ee91-4b48-9c1a-53454313001e/CTS.pdf.aspx on December 23, 2013.

least three physicians billed Medicare for electrodiagnostic tests in 2011.[34] When multiple physicians bill for services provided to the same beneficiary in a given period, there is potential for fraud (i.e., beneficiary-sharing).

Physicians with an unusually high average number of electrodiagnostic test claims for the same beneficiary on the same day. For each physician, we determined the average number of electrodiagnostic test claims submitted for the same beneficiary on the same day in 2011.[35] A high number of electrodiagnostic claims for the same beneficiary on the same day by the same physician is questionable because the physician may be overutilizing electrodiagnostic tests to evaluate the beneficiary on the same day, or billing for services that were never performed.

We also determined whether physicians with questionable billing received CBRs on electrodiagnostic testing in 2011. To do this, we matched the National Provider Identifiers of physicians with questionable billing to those of physicians who received CBRs in 2011. These CBRs were sent to physicians who billed for electrodiagnostic tests in 2010 to help them prevent future improper billing and payments. We calculated the total number of physicians with questionable billing who received CBRs and determined the payments for questionable billing for these physicians.

Geographical Analysis of Physicians With Questionable Billing

We determined the locations of physicians with questionable billing in 2011. To do this, we identified each physician's Core Base Statistical Area (CBSA) on the basis of the ZIP Code listed on the physician's claims for electrodiagnostic tests.[36] CBSAs may be categorized as metropolitan or micropolitan. We determined the percentage of physicians in each metropolitan area who had questionable billing and identified the metropolitan areas with the highest concentrations of physicians with questionable billing.

In metropolitan areas with the highest number of physicians with questionable billing, we calculated the total number of physicians, the percentage of physicians with questionable billing, and the Medicare

[34] When a physician has an unusually high percentage of beneficiaries for whom at least three physicians billed Medicare for electrodiagnostic tests, this may indicate that physicians have worked together to "share" beneficiaries. Beneficiary-sharing is a common fraud scheme and may involve cooperation among managers, physicians, and marketers to solicit beneficiaries or beneficiary Medicare numbers.

[35] We ensured that our threshold met or exceeded the highest total number of tests recommended by AANEM, which was 14 tests.

[36] A CBSA is a region around an urban center that has at least 10,000 people. U.S. Census Bureau, *Metropolitan and Micropolitan Statistical Areas*. Accessed at http://www.census.gov/population/metro/ on January 31, 2013.

payments to physicians with questionable billing in these areas. Additionally, for each metropolitan area with physicians with questionable billing, we identified the number of physicians with at least three measures of questionable billing and the Medicare payments to these physicians.

Limitations

We did not conduct a medical record review to determine whether the services we identified as being associated with questionable billing were inappropriate or fraudulent. Further, these characteristics are not intended to be a comprehensive set of measures for identifying questionable billing for electrodiagnostic tests.

Standards

This study was conducted in accordance with the *Quality Standards for Inspection and Evaluation* issued by the Council of the Inspectors General on Integrity and Efficiency.

FINDINGS

In 2011, 4,901 physicians had questionable billing for Medicare electrodiagnostic tests totaling $139 million

A total of 4,901 physicians met or exceeded the threshold for at least one measure of questionable billing, representing 23 percent of the 21,663 physicians who billed for electrodiagnostic services in 2011. Table 1 shows the number and percentage of physicians by the number of questionable billing measures for which physicians exceeded thresholds. These questionable billings accounted for 31 percent ($139 million of $486 million) of the Medicare payments for electrodiagnostic tests in 2011.

Of the physicians with questionable billing, 49 percent (2,387 of 4,901) were neurologists and physiatrists who, have special training in electrodiagnostic medicine, and therefore may see more patients who require electrodiagnostic testing, and may bill for more of these tests. The remaining 51 percent (2,514 of 4,901) were physicians in other specialties. Physicians with questionable billing in other specialties largely represented internal medicine, family practice, orthopedic surgery, and podiatry (i.e., recognized by AANEM as specialties that are generally not considered to have expertise in electrodiagnostic medicine). Appendix A shows the number and percentage of physicians with questionable billing in each specialty.

Overall, 13 percent (644 of 4,901) of physicians with questionable billing exceeded the thresholds for two or more measures of questionable billing. Appendix B shows the number and percentage of physicians by the number of measures of questionable billing for which physicians exceeded thresholds in each specialty group (i.e., neurologists and physiatrists, and physicians in other specialties).

Table 1. Number and Percentage of Physicians Who Exceeded Thresholds for Questionable Billing, 2011

Number of Measures of Questionable Billing for Which Physicians Exceeded Thresholds	Number of Physicians	Percentage of Physicians
0	16,762	77%
1	4,257	20%
2	572	3%
3	72	<1%
4 or more	0	<1%
Total*	**21,663**	**100%**

*The percentage column sum does not equal total because of rounding.
Source: OIG analysis of 2011 NCH Carrier file.

For each measure of questionable billing, Table 2 shows the total number of physicians who met or exceeded the threshold for unusually high billing and the associated Medicare payments. Appendix C shows the median (i.e., the value at which 50 percent of all physicians billed for that measure); the threshold that indicated unusually high billing; the range of unusually high billing; and the number of physicians in each specialty group with unusually high billing.

Table 2. Physicians With Unusually High Billing by Each Measure of Questionable Billing, 2011*

	Physicians With Unusually High Billing	
Measure of Questionable Billing	Total Number of Physicians Meeting or Exceeding Threshold	Total Medicare Payments
High percentage of electrodiagnostic test claims with modifiers *Modifier 59* *Modifier 25*	2,208 *2,156* *52*	$47 million *$46 million* *$1 million*
High percentage of electrodiagnostic test claims from all billing for Part B items and services	1,155	$61 million
High percentage of electrodiagnostic test claims that did not include both an NCT and needle EMG test	907	$19 million
High average number of miles between physicians' and beneficiaries' locations	700	$15 million
High percentage of beneficiaries for whom at least three physicians billed for electrodiagnostic tests	346	$ 3 million
High average number of electrodiagnostic test claims for the same beneficiary on the same day	334	$20 million
Total**	**4,901**	**$139 million**

* The medians, thresholds, and range of billing for each measure of questionable billing, by specialty group, are listed in Appendix C.
** The sums of the numbers do not equal the totals because some physicians had multiple measures of questionable billing.
Source: OIG analysis of 2011 NCH Carrier File.

In 2011, 2,208 physicians billed for an unusually high percentage of electrodiagnostic tests using modifiers

In 2011, 2,208 physicians billed for an unusually high percentage of electrodiagnostic tests using modifiers 59 and/or 25 on their claims. These claims accounted for $47 million of the 2011 payments for electrodiagnostic tests. Billing for a high percentage of electrodiagnostic tests using modifiers may indicate that a physician is using the modifiers to increase payments inappropriately.

A total of 2,156 physicians billed for an unusually high percentage of electrodiagnostic tests using modifier 59 (i.e., billing for a significant, separately identifiable *non*-E/M service by the same physician on the same day as another procedure). Of all these physicians, 19 percent (405 of 2,156) always billed for electrodiagnostic tests using modifier 59.[37]

A total of 52 physicians billed for an unusually high percentage of electrodiagnostic tests using modifier 25 (i.e., billing for a significant, separately identifiable E/M service by the same physician on the same day as another procedure). Of 21,663 physicians who billed for electrodiagnostic tests in 2011, these 52 were the only physicians who billed for electrodiagnostic tests using modifier 25.[38]

In 2011, 1,155 physicians billed for an unusually high percentage of electrodiagnostic tests

In 2011, 1,155 physicians in specialties other than neurology or physiatry billed for an unusually high percentage of electrodiagnostic tests compared to all of their billing for Part B items and services. These claims accounted for $61 million of the 2011 payments for electrodiagnostic tests. For example, 23 physicians billed only for electrodiagnostic tests and no other Part B items and services in 2011, totaling $685,000.[39] For physicians in specialties other than neurology and physiatry, a high percentage of billing for electrodiagnostic tests may indicate that the physicians are submitting claims for services that were not medically necessary or were never provided to the beneficiary.

---

[37] The three specialties with the highest numbers of physicians who always billed using modifier 59 were internal medicine (89 of 405), neurology (78 of 405), and family practice (61 of 405).

[38] The majority of physicians who billed for electrodiagnostic test claims using modifier 25 were neurologists (30 of 52) and physiatrists (17 of 52).

[39] These physicians represented the following specialties: physical therapist in private practice (13 of 23); independent diagnostic testing facility (5 of 23); family practice (2 of 23); neurosurgery; pediatric medicine, and single or multispecialty clinic or group practice.

In 2011, 907 physicians billed for an unusually high percentage of electrodiagnostic tests that did not include both an NCT and needle EMG test

In 2011, 907 physicians billed for an unusually high percentage of electrodiagnostic tests that did not include both an NCT and a needle EMG test. These claims accounted for $19 million of the 2011 payments for electrodiagnostic tests. Typically, when NCTs are used alone, without integrating needle EMG findings, the results may be misleading, potentially causing important diagnoses to be missed.[40]

All of the physicians whom we identified as having an unusually high percentage of electrodiagnostic tests that did not include both an NCT and a needle EMG test were neurologists or physiatrists. None of the physicians in other specialties were identified statistically as having "unusually high" billing because they almost always billed for electrodiagnostic tests without having both an NCT and a needle EMG test on the same claim; the median for such physicians was 85 percent. These physicians represented approximately $72 million in payments.[41] Because there was no distribution in billing for this measure of questionable billing among non-neurologist and nonphysiatrist physicians, we identified no physicians in this category as billing for unusually high percentages of electrodiagnostic tests that did not include both an NCT and needle EMG test. However, this billing pattern among non-neurologist and nonphysiatrist physicians raises concerns.

In 2011, 700 physicians billed for electrodiagnostic tests for beneficiaries from locations an unusually high average number of miles away

In 2011, 700 physicians billed for electrodiagnostic tests for beneficiaries who resided an unusually high average number of miles from the physicians' practice locations. These claims accounted for $15 million of the 2011 payments for electrodiagnostic tests. For example, we found that one general practitioner in Indianapolis, Indiana, billed for an electrodiagnostic test for a beneficiary who resided nearly 2,000 miles away, in McKinleyville, California. This physician's 27 other beneficiaries resided an average of 1,785 miles away.[42]

A high average number of miles between physicians' and beneficiaries' locations may indicate that a physician is billing for electrodiagnostic tests that were not medically necessary or were never provided to the

[40] NCTs performed without a needle EMG may be acceptable for some diagnoses.
[41] The Tukey method requires a distribution or variability in billing to identify outliers.
[42] Nearly all (26 of 28) of these beneficiaries resided in California.

beneficiary. Further, beneficiaries with conditions that may cause nerve damage, such as diabetes or carpal tunnel syndrome, would not be expected to travel such long distances for electrodiagnostic tests.

In 2011, 346 physicians billed for an unusually high percentage of beneficiaries for whom at least three physicians also billed for electrodiagnostic tests

In 2011, 346 physicians billed for an unusually high percentage of beneficiaries for whom at least three physicians also billed for electrodiagnostic tests. These claims accounted for $3 million of the 2011 payments for electrodiagnostic tests.[43] When multiple physicians bill for the same services provided to the same beneficiary, there is potential for fraud (i.e., beneficiary-sharing). For example, 100 percent of the beneficiaries for 28 physicians had electrodiagnostic test claims from at least 3 physicians in 2011.[44]

In 2011, for about 95 percent of beneficiaries, one physician submitted claims for their electrodiagnostic tests. For about 5 percent of beneficiaries, two physicians submitted claims for their electrodiagnostic tests. For less than 1 percent of beneficiaries, three or more physicians submitted claims for their electrodiagnostic tests. In the case of one beneficiary, nine different physicians billed Medicare for this individual's electrodiagnostic tests in 2011.

In 2011, 334 physicians billed for an unusually high average number of electrodiagnostic tests for the same beneficiary on the same day

In 2011, 334 physicians billed for an unusually high average number of electrodiagnostic tests for the same beneficiary on the same day.[45] These claims accounted for $20 million of the 2011 payments for electrodiagnostic tests. For example, 6 physicians billed for an average of 32 electrodiagnostic tests for the same beneficiary on the same day, almost 5 times the median number of 7 electrodiagnostic tests.[46] Billing for multiple electrodiagnostic tests for the same beneficiary on the same day

---

[43] Thirty providers who had an unusually high percentage of beneficiaries for whom other providers billed Medicare for electrodiagnostic tests also had an unusually high average number of miles between their and beneficiaries' locations.

[44] The majority of these providers had the following specialties: family practice (6 of 28), internal medicine (6 of 28), and orthopedic surgery (4 of 28).

[45] Sixty-seven physicians who billed for an unusually high percentage of electrodiagnostic test claims using modifiers also billed for an unusually high average number of electrodiagnostic test claims for the same beneficiary on the same day.

[46] The six physicians represented the following specialties: family practice, internal medicine, nurse practitioner, and physician assistant.

may indicate that a physician is billing for electrodiagnostic tests that were not medically necessary or were never provided to the beneficiary.

Approximately 20 percent of physicians with questionable billing in 2011 received a CBR on the basis of their 2010 billing for electrodiagnostic tests

CMS issues CBRs that are designed to compare a provider's billing and payment patterns to those of his or her peers across the Nation. Additionally, CBRs are intended to proactively educate providers and help them identify and prevent future errors in their billing practices.

In late 2011, CMS and its contractors issued CBRs to 4,241 physicians who billed for NCTs and needle EMGs in 2010. The CBR analysis measures include some of the same analysis and measures of questionable billing that we used in this report. The primary differences, however, are that CMS typically excludes neurologists and physiatrists from its analysis, and that its measures are not intended to identify physicians who had unusually high billing.[47]

A total of 1,095 physicians who received a CBR in 2011 on the basis of their 2010 billing also had questionable billing for electrodiagnostic tests in 2011, totaling approximately $34 million. The remaining 78 percent (3,806 of 4,901) of physicians whom we identified as having questionable billing did not receive a CBR in 2011.[48] Table 3 shows the number of physicians with questionable billing, whether they received CBRs, and the questionable Medicare payments.

[47] Although CMS's methods for creating CBRs for electrodiagnostic tests state that it excludes neurologists and physiatrists, we found that 12 physicians in the neurologist and physiatrist specialty group who had questionable billing received CBRs.

[48] These physicians may not have billed for electrodiagnostic tests in 2010, so they would not have received a CBR in 2011.

Table 3. Physicians With Questionable Billing and CBRs in Each Specialty Group, 2011

	Number of Physicians With Questionable Billing and CBRs	Medicare Payments*	Number of Physicians With Questionable Billing and no CBRs	Medicare Payments
Physicians in Other Specialties	1,083	$33 million	1,429	$37 million
Neurologists and Physiatrists	12	$786,512	2,377	$68 million
Total	**1,095**	**$34 million**	**3,806**	**$105 million**

* The column sum does not equal total because of rounding.
Source: OIG analysis of 2011 NCH Carrier File.

Thirty-eight percent of physicians with questionable billing for electrodiagnostic tests were in 10 metropolitan areas

Certain metropolitan areas had a higher percentage of physicians with questionable billing for electrodiagnostic tests than did the Nation as a whole, which had 23 percent. Physicians with questionable billing for electrodiagnostic tests in these 10 metropolitan areas made up 38 percent (1,883 of 4,901) of all physicians with questionable billing. The New York, Los Angeles, and Houston areas had the highest Medicare payments associated with questionable billing. Specifically, Medicare paid $27 million associated with questionable billing to 737 physicians in the New York area. Medicare paid approximately $12 million associated with questionable billing to 219 physicians in the Los Angeles area, and approximately $6 million associated with questionable billing to 156 physicians in the Houston area.

Table 4 shows for 10 metropolitan areas the number of physicians with questionable billing, the total number of physicians, the percentage of physicians with questionable billing, and the Medicare payments for physicians with questionable billing. Appendix D includes the number of physicians with questionable billing in these metropolitan areas categorized by specialty group.

Table 4. Metropolitan Areas With the Highest Number of Physicians With Questionable Billing, 2011

Metropolitan Area	Total Number of Physicians With Questionable Billing	Total Number of Physicians	Percentage of Physicians With Questionable Billing	Questionable Medicare Payments
New York, NY	737	2,745	27%	$26,625,059
Los Angeles, CA	219	695	32%	$11,581,976
Houston, TX	156	395	39%	$5,983,651
Miami, FL	193	566	34%	$4,945,350
Dallas, TX	109	345	32%	$3,168,436
Detroit, MI	98	483	20%	$3,717,991
Chicago, IL	97	644	15%	$3,233,386
Washington, DC	96	403	24%	$1,995,174
Phoenix, AZ	91	306	30%	$3,091,317
Baltimore, MD	87	277	31%	$1,674,583
Nation	4,901	21,663	23%	$139 million

Source: OIG analysis of physician data for electrodiagnostic tests, 2011.

Additionally, within the group of 4,901 physicians who met or exceeded the threshold for at least one measure of questionable billing, 72 physicians met or exceeded the thresholds for *three* measures of questionable billing. Medicare paid $4 million associated with questionable billing to such physicians. The metropolitan areas with the highest numbers of such physicians were Las Vegas, Nevada; New York, New York; and Baltimore, Maryland; in these three areas, these physicians received a total of $880,000 associated with questionable billing. Appendix E lists the geographical areas of physicians who met or exceeded the thresholds for three measures of questionable billing in 2011. Appendix F lists the geographical areas of the top 10 physicians with questionable billing in 2011.

CONCLUSION AND RECOMMENDATIONS

We found that 4,901 physicians had questionable billing for electrodiagnostic tests with Medicare payments totaling $139 million in 2011. While there may be legitimate reasons for some of this billing, all of these physicians warrant further scrutiny. The majority of these physicians had an unusually high percentage of claims with modifiers, which allow physicians to receive payments for services that are typically not separately payable. Previous OIG studies also found that some physicians and providers use modifiers to increase payments inappropriately. For example, a 2005 OIG evaluation found that $59 million was paid improperly for claims using modifier 59. Further, many of the non-neurologist and nonphysiatrist physicians whom we identified as having questionable billing had an unusually high percentage of claims for electrodiagnostic tests compared to their claims for other Part B items and services. Finally, physicians in the New York, Los Angeles, and Houston areas had the highest total questionable billing for Medicare electrodiagnostic tests in 2011.

Our findings further indicate vulnerabilities in the monitoring of Medicare billing for electrodiagnostic tests. We found that approximately 20 percent of the physicians with questionable billing for electrodiagnostic tests received CBRs in 2011 on the basis of their 2010 electrodiagnostic test billing. Further, nearly half of the physicians whom we identified as having questionable billing were neurologists and physiatrists. However, CMS typically does not provide CBRs on electrodiagnostic testing to neurologists and physiatrists.

We recommend that CMS:

Increase monitoring of billing for electrodiagnostic tests

CMS should instruct its contractors (e.g., Medicare Administrative Contractors, Zone Program Integrity Contractors) to monitor the billing of electrodiagnostic tests using measures of questionable billing similar to those we incorporated into this study. CMS should develop thresholds for these measures and instruct its contractors to conduct additional reviews of physicians who exceed them. For example, CMS could use AANEM recommendations for the maximum number of electrodiagnostic tests that should be performed to develop edits on the number of tests billed. CMS could also include these measures of questionable billing in its fraud-prevention system. Finally, CMS should use comparative billing reports to identify and monitor all physicians—including neurologists and physiatrists—with unusually high billing for electrodiagnostic tests.

Provide additional guidance and education to physicians regarding electrodiagnostic tests

CMS should update its guidance and provide additional education to physicians who provide electrodiagnostic tests. As part of this effort, CMS should educate physicians on industry guidance regarding providing NCTs in conjunction with needle EMGs for establishing reliable and accurate diagnoses.

Take appropriate action regarding physicians whom we identified as having inappropriate or questionable billing

In a separate memorandum, we will send the claims data for physicians with inappropriate or questionable billing to CMS for appropriate action.

AGENCY COMMENTS AND OFFICE OF INSPECTOR GENERAL RESPONSE

CMS partially concurred with our first two recommendations and concurred with the third one. With regard to the first recommendation, CMS partially concurred and stated that it will evaluate the cost-effectiveness of implementing new thresholds for questionable billing and conducting medical record reviews of physicians who exceed them. CMS also provided information about its efforts to monitor Medicare billing for electrodiagnostic tests. Specifically, CMS will share this report with its Recovery Auditors for possible review and overpayment recovery. CMS will also consider including a model that monitors for unusually high billing for electrodiagnostic tests in its Fraud Prevention System. Finally, CMS will develop CBRs on electrodiagnostic testing that include neurologists and physiatrists.

With regard to the second recommendation, CMS partially concurred and stated that it established revised values for new codes that bundle needle EMG and NCT codes, which has resulted in simplified coding and savings to the Medicare program for these services. CMS noted that it is prohibited from providing guidance on the practice of medicine to physicians and, therefore, it may be a violation to emphasize the importance of providing NCTs in conjunction with needle EMGs. In response to CMS's comments, we clarified this recommendation to state that CMS should educate physicians on industry guidance regarding performing and billing for these services together. We are not recommending that CMS provide guidance on the practice of medicine to physicians.

With regard to the third recommendation, CMS concurred and will instruct the Supplemental Medical Review Contractor to review some or all of the physicians identified in this report. CMS will also ask these contractors to determine which of the seven questionable billing measures were the best predictors of improper payments. Finally, any suspicions of potential fraud will be referred to the appropriate Zone Program Integrity Contractor.

We support CMS's efforts to address these issues and encourage it to continue making progress. For the full text of CMS's comments, see Appendix G.

APPENDIX A

Number and Percentage of Medicare Physicians With Questionable Billing for Electrodiagnostic Tests in Each Specialty, 2011

Specialty	Number of Physicians With Questionable Billing in Each Specialty	Number of Physicians in Each Specialty	Percentage of Physicians With Questionable Billing in Each Specialty
Neurology	1696	7050	24%
Physiatry	693	4245	16%
Internal Medicine	594	2742	22%
Family Practice	461	2144	22%
Orthopedic Surgery	211	1115	19%
Podiatry	163	550	30%
Interventional Pain Management	111	344	32%
General Practice	82	229	36%
Neurosurgery	75	192	39%
Physician Assistant	70	249	28%
Physical Therapist in Private Practice	68	134	51%
Independent Diagnostic Testing Facility (IDTF)	67	86	45%
Pain Management	61	150	41%
Nurse Practitioner	59	266	22%
Hand Surgery	47	135	35%
Anesthesiology	40	170	24%
Cardiology	37	206	18%
Endocrinology	37	180	21%
Rheumatology	36	284	13%
Emergency Medicine	36	102	35%
Nephrology	31	68	46%
General Surgery	22	111	20%
Pediatric Medicine	21	42	50%
Otolaryngology	20	354	6%
Psychiatry	19	30	63%
Diagnostic Radiology	18	46	39%
Colorectal Surgery (*formerly* Proctology)	16	92	17%
Pulmonary Disease	16	45	36%
Plastic and Reconstructive Surgery	14	55	25%
Osteopathic Manipulative Medicine	11	30	37%
Neuropsychiatry	11	18	61%
Obstetrics/Gynecology	9	24	38%
Gastroenterology	7	27	26%
Hematology/Oncology	6	20	30%
Urology	5	17	29%

(continued on next page)

APPENDIX A (CONTINUED)

Number and Percentage of Medicare Physicians With Questionable Billing for Electrodiagnostic Tests in Each Specialty, 2011

Specialty	Number of Physicians With Questionable Billing in Each Specialty	Number of Physicians in Each Specialty	Percentage of Physicians With Questionable Billing in Each Specialty
Infectious Disease	5	12	42%
Vascular Surgery	5	13	38%
Geriatric Medicine	4	18	22%
Allergy/Immunology	3	9	33%
Ophthalmology	2	4	50%
Pathology	2	4	50%
Sports Medicine	2	6	33%
Thoracic Surgery	2	3	67%
Occupational Therapist in Private Practice	2	4	50%
Oral Surgery (Dentists Only)	1	3	33%
Nuclear Medicine	1	1	100%
Single or Multispecialty Clinic or Group Practice	1	4	25%
Peripheral Vascular Disease	1	1	100%
Addiction Medicine	1	2	50%
Critical Care (Intensivists)	1	3	33%
Dermatology	0	1	0%
Audiologist (Billing Independently)	0	4	0%
Clinical Laboratory (Billing Independently)	0	2	0%
Preventive Medicine	0	4	0%
Maxillofacial Surgery	0	1	0%
Certified Clinical Nurse Specialist	0	2	0%
Medical Oncology	0	2	0%
Surgical Oncology	0	6	0%
Radiation Oncology	0	1	0%
Interventional Radiology	0	1	0%
Total	**4,901**	**21,663**	**23%**

Source: OIG analysis of physician data for electrodiagnostic tests, 2011.

APPENDIX B

Number and Percentage of Medicare Physicians Who Exceeded Thresholds of Questionable Billing for Electrodiagnostic Tests by Specialty Group, 2011

Specialty Group	Number of Measures for Which Physicians Exceeded Thresholds of Questionable Billing for Electrodiagnostic Tests	Number of Physicians	Percentage of Physicians
Neurologists and Physiatrists	0	8,903	79%
	1	2,078	18%
	2	265	2%
	3	46	<1%
	4 or more	0	0%
	Total*	**11,292**	**100%**
Physicians in Other Specialties	0	7,859	76%
	1	2,179	21%
	2	307	3%
	3	26	<1%
	4 or more	0	0%
	Total*	**10,371**	**100%**

* The sums of the percentages in the final column does not equal total because of rounding.
Source: OIG analysis of physician data for electrodiagnostic tests, 2011.

APPENDIX C

Physicians With Unusually High Billing by Each Measure of Questionable Billing, 2011

Table C-1. Neurologists and Physiatrists With Unusually High Billing by Each Measure of Questionable Billing, 2011

Measure of Questionable Billing	Median	Neurologists and Physiatrists With Unusually High Billing			
		Threshold	Range of Billing	Medicare Billing	Number of Physicians Exceeding Threshold
High percentage of electrodiagnostic test claims with modifiers				$29.9 million	1,047
Modifier 59	2%	48%	48% to 100%	*$29 million*	*1,000*
*Modifier 25***	0%	0%	<1% to 12%	*$994,000*	*47*
High percentage of electrodiagnostic test claims from all billing for Part B items and services*	--	--	--	--	--
High percentage of electrodiagnostic test claims that did not include both an NCT and needle EMG test	8%	61%	61% to 100%	$18.7 million	907
High average number of miles between physicians' and beneficiaries' locations	116	321	321 to 2,961	$11.7 million	358
High percentage of beneficiaries for whom at least three physicians billed Medicare for electrodiagnostic tests	2%	7%	7% to 100%	$ 1.5 million	256
High average number of electrodiagnostic test claims on the same beneficiary on the same day***	8	14	14 to 30	$15.9 million	181
Total ****				**$68.9 million**	**2,389**

*Because some neurologists and physiatrists may reasonably bill for electrodiagnostic tests and have no other billing for Part B items and services, we did not include neurologists and physiatrists in the analysis for this characteristic.

**The median and threshold are 0 percent for this characteristic because only 47 of 11,292 neurologists and physiatrists used modifier 25 on at least 1 of their 2011 electrodiagnostic test claims. All 47 of these physicians were identified using the Tukey method as having an unusually high percentage.

*** Under the Tukey method, an outlier is a number greater than the 75th percentile plus 1.5 times the interquartile range. For this characteristic of questionable billing, the Tukey method yielded a threshold number of 13 tests. However, because AANEM sets at 14 the maximum number of tests considered reasonable to make a diagnosis, we used a threshold of 14 tests.

****The sums of the columns do not equal totals because some neurologists and physiatrists had multiple measures of questionable billing.

Source: OIG analysis of physician data for electrodiagnostic tests, 2011.

APPENDIX C (CONTINUED)

Physicians With Unusually High Billing by Each Measure of Questionable Billing, 2011

Table C-2. Physicians in Other Specialties With Unusually High Billing by Each Measure of Questionable Billing, 2011

		Physicians in Other Specialties With Unusually High Billing			
Measure of Questionable Billing	**Median**	**Threshold**	**Range of Billing**	**Medicare Billing**	**Number of Physicians Exceeding Threshold**
High percentage of electrodiagnostic test claims with modifiers	0%	42%	42% to 100%	$17 million *$17 million*	1,161 *1,156*
Modifier 59	0%	0%	<1% to 25%	*$16,000*	5
*Modifier 25**					
High percentage of electrodiagnostic test claims from all billing for Part B items and services	1%	13%	13% to 100%	$60.7 million	1,155
High percentage of electrodiagnostic test claims that did not include both an NCT and needle EMG test **	85%	100%	--	--	--
High average number of miles between physicians' and beneficiaries' locations	111	335	335 to 2,541	$3.4 million	342
High percentage of beneficiaries for whom at least three physicians billed Medicare for electrodiagnostic tests	6%	28%	28% to 100%	$1.3 million	90
High average number of electrodiagnostic test claims for the same beneficiary on the same day	7	19	19 to 32	$4.1 million	153
Total * **				**$69.9 million**	**2,512**

*The median and threshold are 0 percent for this characteristic because only 5 of 10,371 physicians with other specialties used modifier 25 on their 2011 electrodiagnostic test claims. All five of these physicians were identified using the Tukey method as having an unusually high percentage.

** The Tukey method requires a distribution or variability in billing to identify unusual behavior. Because there was no distribution in billing for this measure of questionable billing among physicians in this specialty group (i.e., they almost always billed for NCTs without needle EMGS), no physicians were identified as billing for unusually high percentages of NCTs without needle EMGs.

*** The sums of the columns do not equal total because some physicians in other specialties had multiple questionable billing characteristics.

Source: OIG analysis of physician data for electrodiagnostic tests, 2011.

APPENDIX D

Metropolitan Areas With the Highest Number of Physicians With Questionable Billing by Specialty Group, 2011

Metropolitan Area	Number of Neurologists and Physiatrists with Questionable Billing	Number of Physicians in Other Specialties with Questionable Billing	Total Number of Physicians With Questionable Billing
New York, NY	243	494	737
Los Angeles, CA	114	105	219
Miami, FL	75	118	193
Houston, TX	62	94	156
Dallas, TX	79	30	109
Detroit, MI	44	54	98
Chicago, IL	57	40	97
Washington, DC	47	49	96
Phoenix, AZ	45	46	91
Baltimore, MD	41	46	87
Total	807	1,076	1,883
Nation	**2,387**	**2,514**	**4,901**

Source: OIG analysis of physician data for electrodiagnostic tests, 2011.

APPENDIX E

Geographical Areas of Physicians With Three Measures of Questionable Billing, 2011

Geographical Area	Questionable Medicare Billing	Number of Physicians With Multiple Measures of Questionable Billing	Percentage of Physicians With Multiple Measures of Questionable Billing
Las Vegas-Paradise, NV	$420,083	8	11.11%
New York-Northern New Jersey-Long Island, NY-NJ-PA	$351,020	6	8.33%
Baltimore-Towson, MD	$108,039	5	6.94%
Miami-Fort Lauderdale-Pompano Beach, FL	$34,258	4	5.55%
Boston-Cambridge-Quincy, MA-NH	$95,361	3	4.17%
Fort Collins-Loveland, CO	$53,441	3	4.17%
Phoenix-Mesa-Glendale, AZ	$3,439	3	4.17%
Denver-Aurora-Broomfield, CO	$406,247	2	2.78%
Oxnard-Thousand Oaks-Ventura, CA	$192,849	2	2.78%
Jamestown-Dunkirk-Fredonia, NY	$43,838	2	2.78%
Detroit-Warren-Livonia, MI	$32,639	2	2.78%
Los Angeles-Long Beach-Santa Ana, CA	$16,150	2	2.78%
San Diego-Carlsbad-San Marcos, CA	$11,482	2	2.78%
Houston-Sugar Land-Baytown, TX	$9,451	2	2.78%
Cape Coral-Fort Myers, FL	$698,550	1	1.39%
Dallas-Fort Worth-Arlington, TX	$548,708	1	1.39%
New Orleans-Metairie-Kenner, LA	$350,562	1	1.39%
Lansing-East Lansing, MI	$142,734	1	1.39%
Washington-Arlington-Alexandria, DC-VA-MD-WV	$136,775	1	1.39%
Hagerstown-Martinsburg, MD-WV	$54,710	1	1.39%
Anchorage, AK	$32,034	1	1.39%
St. Louis, MO-IL	$29,132	1	1.39%
Austin-Round Rock-San Marcos, TX	$28,814	1	1.39%
Trenton-Ewing, NJ	$25,832	1	1.39%
Topeka, KS	$23,470	1	1.39%
Nashville-Davidson--Murfreesboro-Franklin, TN	$21,965	1	1.39%
New Haven-Milford, CT	$18,538	1	1.39%

(continued on next page)

APPENDIX E (CONTINUED)

Geographical Areas of Physicians With Three Measures of Questionable Billing, 2011

Geographical Area	Questionable Medicare Billing	Number of Physicians With Multiple Measures of Questionable Billing	Percentage of Physicians With Multiple Measures of Questionable Billing
Louisville-Jefferson County, KY	$12,007	1	1.39%
Lake Havasu City-Kingman, AZ	$11,969	1	1.39%
Toledo, OH	$9,504	1	1.39%
Flint, MI	$6,793	1	1.39%
McAllen-Edinburg-Mission, TX	$3,766	1	1.39%
Chicago-Naperville-Joliet, IL-IN-WI	$2,508	1	1.39%
San Juan-Caguas-Guaynabo, PR	$1,718	1	1.39%
Bloomsburg-Berwick, PA	$1,062	1	1.39%
Minneapolis-St. Paul-Bloomington, MN-WI	$854	1	1.39%
San Angelo, TX	$534	1	1.39%
Somerset, PA	$448	1	1.39%
Brownsville-Harlingen, TX	$430	1	1.39%
Rural	$88,485	1	1.39%
Total*	**$4 million**	**72**	**100%**

*The sum of the percentages in the final column does not equal the total because of rounding.
Source: OIG analysis of physician data for electrodiagnostic tests, 2011.

APPENDIX F

Geographical Areas of Top 10 Physicians With Questionable Billing, 2011

Physician Number	Geographical Area	Questionable Medicare Billing
Physician 1	Los Angeles-Long Beach-Santa Ana, CA	$3,103,642
Physician 2	Miami-Fort Lauderdale-Pompano Beach, FL	$900,513
Physician 3	New York-Northern New Jersey-Long Island, NY-NJ-PA	$769,644
Physician 4	Brownwood, TX	$732,342
Physician 5	Cape Coral-Fort Myers, FL	$698,550
Physician 6	Los Angeles-Long Beach-Santa Ana, CA	$690,872
Physician 7	New York-Northern New Jersey-Long Island, NY-NJ-PA	$597,269
Physician 8	Bakersfield-Delano, CA	$576,119
Physician 9	Detroit-Warren-Livonia, MI	$564,589
Physician 10	New York-Northern New Jersey-Long Island, NY-NJ-PA	$558,112

Source: OIG analysis of physician data for electrodiagnostic tests, 2011.

APPENDIX G
Agency Comments

DEPARTMENT OF HEALTH & HUMAN SERVICES

Centers for Medicare & Medicaid Services

Administrator
Washington, DC 20201

DATE: MAR 11 2014

TO: Daniel R. Levinson
Inspector General

/S/

FROM: Marilyn Tavenner
Administrator

SUBJECT: Office of the Inspector General (OIG) Draft Report: *"Questionable Billing for Medicare Electrodiagnostic Tests"* (OEI-04-12-00420)

The Centers for Medicare & Medicaid Services (CMS) appreciates the opportunity to review and comment on the above-mentioned OIG report. In 2011, Medicare paid approximately $486 million to 21,700 physicians for electrodiagnostic tests billed on behalf of 877,000 beneficiaries. Electrodiagnostic tests are used to evaluate patients who may have nerve damage. Recent investigations have found that electrodiagnostic testing is an area vulnerable to fraud, waste and abuse. CMS issues comparative billing reports to providers for a variety of services, including electrodiagnostic testing. Such reports are intended to proactively educate providers and identify and correct errors in their billing.

The OIG developed seven measures of questionable billing on the basis of past OIG work and input from CMS staff. OIG analyzed Medicare 2011 electrodiagnostic test claims to identify physicians who had unusually high billing for at least one of these measures. OIG also determined whether physicians with questionable billing received comparative billing reports in 2011 for electrodiagnostic testing. In addition, OIG identified the geographic areas with the largest amounts of questionable billing.

The OIG found that in 2011, 4,901 physicians had questionable billing for Medicare electrodiagnostic tests totaling $139 million. OIG also found that approximately 20 percent of these physicians received comparative billing reports, on the basis of their 2010 billing for electrodiagnostic tests. In addition, physicians in the New York, Los Angeles, and Houston areas had the largest total questionable billing for Medicare electrodiagnostic tests in 2011.

The OIG's recommendations and CMS responses to those recommendations are discussed below.

OIG Recommendation

The OIG recommends increase monitoring of billing for electrodiagnostic tests. CMS should instruct its contractors (e.g., Medicare Administrative Contractors (MAC), Zone Program Integrity Contractors (ZPIC) to monitor the billing of electrodiagnostic tests using measures of questionable billing similar to those we incorporated into this study. CMS should develop thresholds for these measures and instruct its contractors to conduct additional reviews of physicians who exceed them. For example, CMS could use American Association of Neuromuscular & Electrodiagnostic Medicine (AANEM) recommendations for the maximum number of electrodiagnostic tests that should be performed to develop edits on the number of tests billed. CMS could also include these measures of questionable billing in its Fraud Prevention System. Finally, CMS should use comparative billing reports to identify and monitor all physicians, including neurologists and physiatrists with unusually high billing, for electrodiagnostic tests.

CMS Response

The CMS partially concurs with this recommendation. CMS will need to evaluate if implementing new thresholds that trigger additional manual medical review by CMS MACs is cost-effective given the high cost of medical review. However, CMS will instruct the Supplemental Medical Review Contractor to conduct further study to determine which of the seven categories of questionable billing, if any, are the best predictors of improper payments. CMS will also share this report with Recovery Auditors for possible review and overpayment recovery.

The CMS will develop comparative billing reports (CBRs) on electrodiagnostic testing, including those performed by neurologists and physiologists. CMS will send CBRs to the top 5,000 physicians who have a high utilization rate compared to the average utilization rate for other physicians of the same specialty.

In addition, CMS will evaluate the feasibility of including a model in the Fraud Prevention System that monitors for unusually high billing, for electrodiagnostic tests.

OIG Recommendation

The OIG recommends CMS provide additional guidance and education to physicians regarding electrodiagnostic tests. CMS should update its guidance and provide additional education to physicians who provide electrodiagnostic tests. As part of this effort, CMS should emphasize the importance of providing nerve conduction tests (NCTs) in conjunction with needle electromyography tests (EMGs) for establishing reliable and accurate diagnoses.

Additionally, CMS should determine whether certain specialties lack appropriate training in electrodiagnostic medicine, as it has done for chiropractors, and restrict payments to these physicians who perform and/or bill for electrodiagnostic tests.

CMS Response

The CMS partially concurs with this recommendation. Due to recent changes to coding for these tests we believe that the physician community is well aware of our billing rules for electrodiagnostic tests. Both nerve conduction tests and electromyography tests were identified for review as part of the misvalued codes initiative because they were performed together more than 75 percent of the time. The American Medical Association's CPT Editorial Panel created new bundled payment codes for nerve conduction for Calendar Year (CY) 2013 and new codes for electromyography testing when performed with nerve conduction testing for CY 2012. We established revised values for these new bundled codes that reflected the efficiencies of tests being performed together in the same session. This resulted in sizable reductions in payment for these specific services and simplified the coding.

With respect to OIG's recommendation that CMS emphasize the importance of providing NCTs in conjunction with EMGs to establish reliable and accurate diagnoses, CMS believes that doing so would violate a longstanding federal prohibition against providing guidance on the practice of medicine to physicians. Section 1801 of the Act [42 U.S.C. 1395] states: Nothing in this title shall be construed to authorize any Federal officer or employee to exercise any supervision or control over the practice of medicine or the manner in which medical services are provided, or over the selection, tenure, or compensation of any officer or employee of any institution, agency, or person providing health services; or to exercise any supervision or control over the administration or operation of any such institution, agency, or person.

OIG Recommendation

The OIG recommends CMS take appropriate action regarding physicians whom we identified as having inappropriate or questionable billing. In a separate memorandum, we will send the claims data for physicians with inappropriate or questionable billing to CMS for appropriate action.

CMS Response

The CMS concurs with this recommendation. CMS will task the Supplemental Medical Review Contractor (SMRC) with performing complex medical reviews on some or all of the physicians identified by the OIG. CMS will ask the SMRC to determine which of the seven categories of questionable billing, if any, were the best predictors of improper payments. If potential fraud is suspected by the SMRC, those providers will be referred to the appropriate ZPIC.

We request that OIG furnish the necessary data (e.g., current Medicare contractor numbers, provider number, claims information including the paid date, claim number, Health Insurance Claim Number, overpaid amount, current procedural terminology code, etc.) to follow-up on the claims referenced in the draft report. In addition, CMS requests that current Medicare contractor-specific data be sent through a secure portal to better facilitate the transfer of information.

Again, we appreciate the opportunity to comment on this draft report and look forward to working with OIG on this and other issues.

ACKNOWLEDGMENTS

This report was prepared under the direction of Dwayne Grant, Regional Inspector General for Evaluation and Inspections in the Atlanta regional office, and Jaime Durley, Deputy Regional Inspector General.

Latrice Rollins served as lead analyst. Central office staff who provided support include Scott Horning, Althea Hosein, Kevin Manley, Christine Moritz, and Mandy Walz.

Office of Inspector General

http://oig.hhs.gov

The mission of the Office of Inspector General (OIG), as mandated by Public Law 95-452, as amended, is to protect the integrity of the Department of Health and Human Services (HHS) programs, as well as the health and welfare of beneficiaries served by those programs. This statutory mission is carried out through a nationwide network of audits, investigations, and inspections conducted by the following operating components:

Office of Audit Services

The Office of Audit Services (OAS) provides auditing services for HHS, either by conducting audits with its own audit resources or by overseeing audit work done by others. Audits examine the performance of HHS programs and/or its grantees and contractors in carrying out their respective responsibilities and are intended to provide independent assessments of HHS programs and operations. These assessments help reduce waste, abuse, and mismanagement and promote economy and efficiency throughout HHS.

Office of Evaluation and Inspections

The Office of Evaluation and Inspections (OEI) conducts national evaluations to provide HHS, Congress, and the public with timely, useful, and reliable information on significant issues. These evaluations focus on preventing fraud, waste, or abuse and promoting economy, efficiency, and effectiveness of departmental programs. To promote impact, OEI reports also present practical recommendations for improving program operations.

Office of Investigations

The Office of Investigations (OI) conducts criminal, civil, and administrative investigations of fraud and misconduct related to HHS programs, operations, and beneficiaries. With investigators working in all 50 States and the District of Columbia, OI utilizes its resources by actively coordinating with the Department of Justice and other Federal, State, and local law enforcement authorities. The investigative efforts of OI often lead to criminal convictions, administrative sanctions, and/or civil monetary penalties.

Office of Counsel to the Inspector General

The Office of Counsel to the Inspector General (OCIG) provides general legal services to OIG, rendering advice and opinions on HHS programs and operations and providing all legal support for OIG's internal operations. OCIG represents OIG in all civil and administrative fraud and abuse cases involving HHS programs, including False Claims Act, program exclusion, and civil monetary penalty cases. In connection with these cases, OCIG also negotiates and monitors corporate integrity agreements. OCIG renders advisory opinions, issues compliance program guidance, publishes fraud alerts, and provides other guidance to the health care industry concerning the anti-kickback statute and other OIG enforcement authorities.