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Medicare's Reimbursement Reduction for Nerve Conduction Studies: Effect on Use and Payments

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To decrease health care costs, Medicare sought to identify overvalued Current Procedural Terminology (CPT) codes, including those with rapid volume growth, those submitted multiple times, or those submitted in conjunction with other codes.¹ The codes for nerve conduction studies (NCS) met all 3 criteria.² Electromyography (EMG) should typically be performed with NCS.³ Furthermore, EMG and NCS are part of the core residency training for neurologists and physiatrists but not for other health care professionals (physicians, podiatrists, physical therapists, nurse practitioners, and physician assistants). Medicare implemented a sharp reduction in reimbursement for NCS on January 1, 2013,⁴ but reimbursement for EMG was not changed. The effect of this policy on providers' use of services and reimbursement payments for this is unclear.

Methods

A retrospective analysis was done between July and December 2015 of Medicare EMG and NCS use and payments to health care professionals for 2012 and 2013 using the Physician and Other Supplier Public Use File. Individual billable services were identified by CPT codes and G-codes. For neurologists, other commonly performed services were also investigated (Table 1).

To determine the number of visits for NCS in 2012, the highest number of visits for CPT codes 95900, 95903, and 95904 was identified. To determine the number of visits for NCS in 2013, the number of unique services for codes 95907 to 95913 was summed. A complete

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Administrative, technical, or material support: Burke.

Study supervision: Callaghan, De Lott.

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EMG was identified with codes 95860 to 95864 and 95886, and limited EMG with codes 95870 and 95885. Payments were calculated by multiplying the number of services by the average Medicare payment received. Analyses were limited to providers receiving a Medicare payment for any CPT code or G-code in both 2012 and 2013. Sensitivity analyses done with multilevel linear regression to adjust for average Hierarchical Condition Category score, hospital referral region, and percentage of EMG and/or NCS services performed at facilities did not change the inferences used in the analysis. Because this study involved research using publicly available data, it was not considered to be regulated by the University of Michigan Institutional Review Board.

Results

In 2012, a total of 11 336 health care professionals performed EMG and/or NCS, as compared with 9807 in 2013 (Table 2). Decreases in the numbers of NCS performed by neurologists were 47 068 (10.1%); by physiatrists, 25 366 (13.8%); and by other health care professionals, 46 676 (30.7%). The number of EMGs performed by neurologists and physiatrists changed by less than 3% from 2012 to 2013. In contrast, the number of EMGs performed by other health care professionals decreased by 3849 (7.3%). Of the other health care professionals performing EMG and/or NCS in 2012, a total of 41% stopped performing EMG and/or NCS in 2013. The number of nerves per NCS and limbs per EMG study changed by less than 7% for all health care professionals.

Total NCS payments to all health care professionals decreased by 68% (\$219 million), from \$319 653 039 to \$101 108 830, with 22% (\$48 million) attributable to a decrease in use. Health care professionals other than neurologists and physiatrists accounted for 47% of the decrease in payments through reductions in the use of NCS, even though they accounted for only 23% (\$73 559 201 of \$319 653 039) of the total payments for NCS in 2012. Total EMG payments to all health care professionals increased by \$0.7 million (1.2%).

For the 11 800 neurologists included in the analysis, little change in the number of other commonly performed services (Table 1) was observed.

Discussion

The Medicare NCS reimbursement policy implemented on January 1, 2013, was associated with a 15% decrease in NCS use, from 801 217 to 682 107 studies, and with the \$219 million decrease cited above in Medicare payments during the subsequent year. Other health care professionals disproportionately decreased their use of NCS relative to its use by neurologists and physiatrists, accounting for most of the savings from its decreased use. The use of EMG by neurologists and physiatrists changed little, whereas a decrease in its use among other health care providers was observed, attributable to a large proportion of these providers who stopped EMG and NCS altogether. The reduction in use of EMG and NCS by other health care professionals may be a positive outcome of the change in the Medicare reimbursement policy because these providers typically lack certification and residency training for EMG and NCS. Because NCS should usually be performed with EMG,³ the reduction in neurologists' and physiatrists' use of NCS without a concomitant decline in the

use of EMG may reflect a decrease in unnecessary tests. Health care professionals also did not change the study length of NCS despite changing incentives for the number of nerves studied. Furthermore, neurologists did not increase their use of other services to compensate for the loss in NCS-related revenue. Past studies revealed that decreases in Medicare reimbursement did not reduce appropriate testing and treatment, but curtailed inappropriate treatment.^{5,6} Although our study did not contain information on study appropriateness, the pattern of change in use of EMG and NCS suggests findings similar to those in past studies of Medicare reimbursement with regard to reducing inappropriate, but not appropriate, testing and treatment. Notably, our data cannot address the fairness of current NCS reimbursement. Other limitations of our study include the absence of technical payment information for EMG and NCS provided in a facility.

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Table 1 Changes in Medicare Services Provided by 11 800 Neurologists and Resulting Payments From 2012 to 2013

| Characteristic | 2012 | | | 2013 | | | Absolute Change in Payment per Neurologist 2012–2013, \$ |
|--|--------------------|--|---|--------------------|--|---|--|
| | Total Studies, No. | Proportion of Neurologists Performing Service, % | Mean Payment per Neurologist, \$ ^a | Total Studies, No. | Proportion of Neurologists Performing Service, % | Mean Payment per Neurologist, \$ ^a | |
| All | 12 295 597 | 100 | 96 803 | 11 611 844 | 100 | 87 706 | -9097 |
| Nerve conduction studies | 465 796 | 46.6 | 15 260 | 418 728 | 39.8 | 5118 | -10 142 |
| Electromyography complete | 371 834 | 40.1 | 3086 | 383 193 | 40.5 | 3146 | 60 |
| Electromyography limited | 76 288 | 14.2 | 311 | 77 493 | 14.0 | 324 | 13 |
| Electromyography or nerve conduction study other | 16 400 | 2.4 | 71 | 23 614 | 2.8 | 123 | 52 |
| Evaluation and management | 8 379 260 | 97.6 | 57 497 | 8 394 076 | 97.6 | 57 668 | 171 |
| Electroencephalography | 719 713 | 49.5 | 8166 | 717 041 | 49.0 | 9499 | 1333 |
| Imaging | 304 628 | 13.9 | 3193 | 299 422 | 13.5 | 3179 | -14 |
| Polysomnogram | 132 468 | 9.1 | 2542 | 131 215 | 9.0 | 2411 | -131 |
| Injection or infusion | 321 029 | 15.0 | 2549 | 324 250 | 15.4 | 2458 | -91 |
| Intraoperative monitoring | 54 914 | 4.4 | 1015 | 44 604 | 4.0 | 508 | -507 |
| Evoked potentials | 77 225 | 5.4 | 428 | 80 632 | 5.7 | 460 | 32 |
| Neurostimulation | 32 591 | 3.4 | 349 | 36 329 | 3.8 | 400 | 51 |
| Vestibular | 64 627 | 3.0 | 337 | 79 060 | 3.4 | 366 | 29 |
| Neuropsychiatric | 52 327 | 5.0 | 334 | 57 551 | 5.2 | 372 | 38 |
| Autonomic | 17 449 | 1.3 | 108 | 19 125 | 1.5 | 206 | 98 |
| Other | 535 621 | 18.1 | 1557 | 525 511 | 18.6 | 1469 | -88 |

^a Mean payment per neurologist represents the average payment among all neurologists in the sample, and not only among those who performed the relevant service.

Changes in Medicare Use and Payments for Nerve Conduction Studies and Electromyography by All Medicare Provider Types From 2012 to 2013^a

| Test | 2012 | | 2013 | | Relative Change in Total Studies 2012–2013, % | | |
|----------------------------------|--------------------|--|-------------------------------|--------------------|---|--|-------------------------------|
| | Total Studies, No. | Study Length, Unit, Mean (SD) ^b | Mean Payment per Study, US \$ | Total Studies, No. | | Study Length, Unit, Mean (SD) ^b | Mean Payment per Study, US \$ |
| Nerve Conduction Studies | | | | | | | |
| Neurology | 465 796 | 8.11 (2.81) | 387 | 418 728 | 7.89 (2.63) | 144 | -10.1 |
| Physiatry | 183 665 | 7.32 (2.41) | 360 | 158 299 | 7.45 (2.42) | 140 | -13.8 |
| Other | 151 756 | 9.23 (3.93) | 485 | 105 080 | 9.87 (3.63) | 176 | -30.7 |
| Total | 801 217 | 8.21 (3.13) | 398 | 682 107 | 8.19 (2.94) | 148 | -14.9 |
| Electromyography Complete | | | | | | | |
| Neurology | 371 834 | 1.54 (0.45) | 98 | 383 193 | 1.54 (0.44) | 97 | 3.1 |
| Physiatry | 151 893 | 1.50 (0.38) | 96 | 157 404 | 1.47 (0.34) | 94 | 3.6 |
| Other | 46 270 | 1.76 (0.65) | 105 | 43 028 | 1.70 (0.54) | 108 | -7.0 |
| Total | 569 997 | 1.56 (0.47) | 98 | 583 625 | 1.54 (0.43) | 97 | 2.4 |
| Electromyography Limited | | | | | | | |
| Neurology | 76 288 | 1.42 (0.41) | 48 | 77 493 | 1.44 (0.41) | 49 | 1.6 |
| Physiatry | 18 646 | 1.37 (0.38) | 58 | 17 864 | 1.38 (0.39) | 60 | -4.2 |
| Other | 6373 | 1.45 (0.48) | 57 | 5766 | 1.50 (0.54) | 57 | -9.5 |
| Total | 101 307 | 1.41 (0.41) | 51 | 101 123 | 1.43 (0.42) | 52 | -0.2 |

^aMedicare provider types include physicians, podiatrists, physical therapists, nurse practitioners, and physician assistants.

^bMean study length is the mean number of nerves (nerve conduction study) or limbs (complete or limited electromyography) as determined on the basis of corresponding current procedural terminology codes.