



Letter

Putting allergy/immunology into context: analysis of the 2012 US Medicare reimbursement data

Released in April 2014 by the Centers for Medicare & Medicaid Services (CMS), the Provider Utilization and Payment Data Physician and Other Supplier Public Use File (Physician and Other Supplier PUF) is the first unrestricted look into Medicare use and payment data in more than 3 decades. Intended to increase transparency in health care and government, the file contains reimbursement information on 6,000 different procedures and services reimbursed to more than 880,000 health care providers in 2012.¹

As the health care field strives to understand and balance cost with quality (ie, the value equation), this database is being actively analyzed.^{2,3} We present a novel analysis of the Physician and Other Supplier PUF with the aim of better understanding how Medicare use and payments of allergy/immunology professionals compare with other types of providers. The primary outcomes were the mean number of beneficiaries seen and amount reimbursed by Medicare. This analysis provides insight into how allergy/immunology fits into the larger health care landscape.

The Medicare Physician and Other Supplier Aggregate table, CY2012, data file was used for this analysis.¹ The full methods of this data set have been published by the CMS.⁴ All providers with an active national provider number who were reimbursed for Healthcare Common Procedure Coding System codes 11 or more times were included in the final database.

Of the 89 provider types included in this file, we excluded all provider types that were non-MD or DO degree types (eg, chiropractors and physical therapists), organizational provider types (eg, ambulatory surgical center), non-face-to-face diagnostic specialties (eg, pathology and diagnostic radiology), and specialties with fewer than 100 providers. Exclusions were designed to ensure comparisons between specialty types and national norms were reflective of provider types similar to allergy/immunology providers (ie, direct patient care, single provider, and provider with an equivalent medical degree). A full list of exclusion and inclusion criteria is given in eTable 1.

After exclusions, the total number of unique beneficiaries seen in 2012 and the mean amount paid by CMS were calculated for all provider types, and provider types were ranked. To compare allergy/immunology providers with other physician types, these calculations were performed for all provider types except allergy/immunology providers. Wilcoxon 2-sided nonparametric testing was used, with $P < .05$ considered significant to compare allergy/immunology providers with all other provider types as a single group. Analysis was completed using Microsoft Excel 2010, version 10.2 (Microsoft Corporation, Redmond, Washington), and JMP, version 10.0 (SAS Institute Inc, Cary, North Carolina).

Fifty-one provider types remained after exclusions. Final analysis identified 3,119 allergy/immunology providers and 504,271 providers of other provider type. Allergy/immunology providers

saw a mean (SD) of 160.4 (179.6) unique beneficiaries and collected a mean (SD) of \$52,762 (\$103,426). Table 1 compares numbers of beneficiaries seen and amount reimbursed by allergy/immunology providers to all other providers. Allergy/immunology providers ranked 45th of 51 provider types in number of beneficiaries seen and 39th in amount reimbursed by the CMS in 2012. eFigure 1 shows each provider type ranked in decreasing order of number of beneficiaries seen and amount reimbursed.

The Physician and Other Supplier PUF provides a unique opportunity to gain insight into health care use in the United States. This analysis reveals that allergy/immunology providers saw fewer Medicare patients, on average, and were reimbursed less than most other providers in 2012. It may not be surprising that allergy/immunology providers see fewer Medicare patients than many of our colleagues, but this is the first time this hypothesis has tested in such a large data set.

The reasons for these dissimilarities cannot be directly ascertained from this data set and are likely multifactorial in nature. One possibility is the diseases allergists/immunologists encounter have a higher prevalence in patients younger than 65 years. For instance, one population-based study found that the mean age of patients presenting with nasal symptoms is in the low to mid-40s.⁵

Several limitations are present in this database. Although nationally representative, this database only contains Medicare patient reimbursement and as such does not represent the included provider's entire practice. Practitioners who do not see any Medicare patients are absent from this database. Another limitation of the Physician and Other Supplier PUF is lack of risk stratification.⁶ The database contains extensive amounts of utilization data but lacks information on reason for reimbursement (ie, *International Classification of Disease, Ninth Revision*, codes). This type of information would be useful in understanding differences in specific utilization rates and patterns.

Despite these limitations, there are very compelling reasons to engage in analyses such as the one presented here. The Physician and Other Provider PUF provides a nationally representative sample of allergy/immunology provider utilization patterns and provides a reasonable understanding of current national norms both within our field and compared with other providers.

As a publicly available tool, this database is being actively analyzed.^{2,3} The popular press has also brought this database into the public eye, most notably by the *New York Times*, which created a tool to search the database by physician name and location.⁷ High-profile commentaries have expressed both encouragement and caution surrounding this extensive data set.^{6,8} Although there are certainly limitations of using this database, the information is actively being analyzed by providers, patients, and payers.

Table 1

Mean number of beneficiaries seen and mean amount paid by CMS to allergy/immunology providers compared with all other providers

Variable	Allergy/immunology providers (n = 3119)	All other providers (n = 504,271)	P value ^a
Beneficiaries seen			<.001
Total No., mean (SD)	160.4 (179.6)	370.5 (600.1)	
25th Percentile	61	107	
50th Percentile	116	250	
75th Percentile	206	487	
CMS payment, \$			<.001
Total payment, mean (SD)	52,762 (103,425)	103,091 (209,805)	
25th Percentile	12,840.50	16,093.60	
50th Percentile	29,687	48,461	
75th Percentile	59,644.80	114,632	

Abbreviation: CMS, Centers for Medicare & Medicaid Services.

^aP value based on Wilcoxon Two sided Non-Parametric test.

Reimbursement data are only one side of the health care value equation. It is prudent of the allergy/immunology community to actively assess this information and be introspective in regard to how our patients' outcomes compare with the costs. This analysis presents one side of the health care value equation (ie, cost), and future steps are needed to balance the value equation (ie, outcomes and quality measures). Allergy/immunology providers are indeed striving to articulate and measure appropriate quality metrics.⁹ We anticipate this analysis and ones like it will help our field continue to articulate the high value of the care we provide.

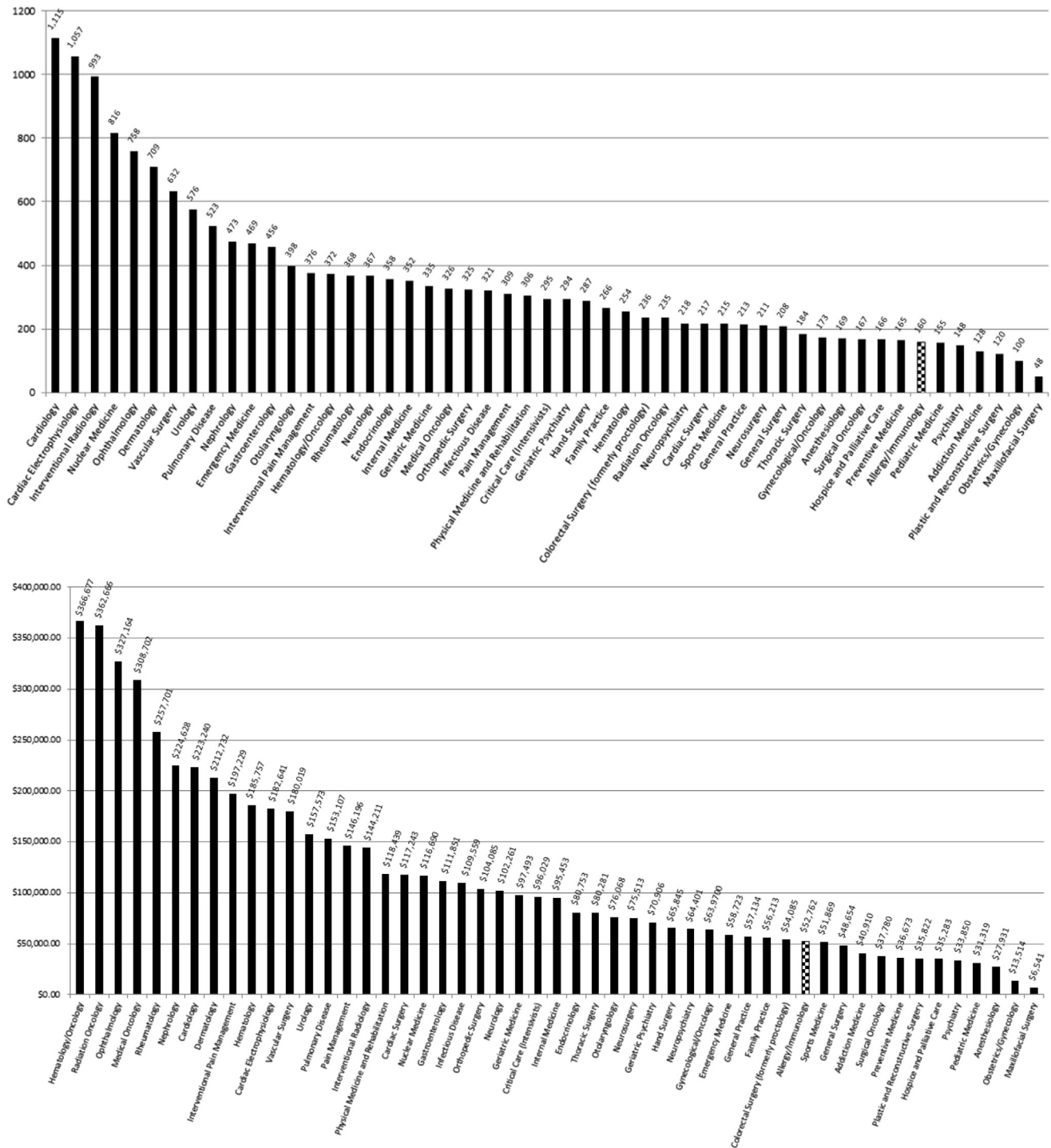
Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.anai.2014.11.016>.

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eFigure 1. Mean number of beneficiaries seen ranked by provider type (top) and mean amount paid by Centers for Medicare & Medicaid Services ranked by provider type (bottom).

eTable 1

Excluded and included provider types

Excluded provider types ^a	Included provider types
Peripheral vascular disease (n=74)	Addiction medicine
Sleep medicine (n=4)	Allergy/immunology
All other suppliers	Anesthesiology
Ambulance service supplier	Cardiac electrophysiology
Ambulatory surgical center	Cardiac surgery
Anesthesiologist assistants	Cardiology
Audiologist (billing independently)	Colorectal surgery (formerly proctology)
Certified clinical nurse specialist	Critical care (intensivists)
Certified nurse midwife	Dermatology
Chiropractic	Emergency medicine
Clinical laboratory	Endocrinology
Clinical psychologist	Family practice
Certified registered nurse anesthetist	Gastroenterology
Diagnostic radiology	General practice
Independent diagnostic testing facility	General surgery
Licensed clinical social worker	Geriatric medicine
Mammographic screening center	Geriatric psychiatry
Mass immunization roster biller	Gynecological/oncology
Multispecialty clinic/group practice	Hand surgery
Nurse practitioner	Hematology
Occupational therapist	Hematology/oncology
Optometry	Hospice and palliative care
Oral surgery (dentists only)	Infectious disease
Osteopathic manipulative medicine	Internal medicine
Pathology	Interventional pain management
Pharmacy	Interventional radiology
Physical therapist	Maxillofacial surgery
Physician assistant	Medical oncology
Podiatry	Nephrology
Portable x-ray	Neurology
Psychologist (billing independently)	Neuropsychiatry
Public health welfare agency	Neurosurgery
Radiation therapy	Nuclear medicine
Registered dietician/nutrition professional	Obstetrics/gynecology
Slide preparation facility	Ophthalmology
Speech language pathologist	Orthopedic surgery
Unknown physician specialty code	Otolaryngology
Unknown supplier/provider	Pain management
	Pediatric medicine
	Physical medicine and rehabilitation
	Plastic and reconstructive surgery
	Preventive medicine
	Psychiatry
	Pulmonary disease
	Radiation oncology
	Rheumatology
	Sports medicine
	Surgical oncology
	Thoracic surgery
	Urology
	Vascular surgery

^aThe following were excluded: organizational provider types, non-MD or DO degree provider types, non-face-to-face diagnostic specialties, and specialties with fewer than 100 providers.