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Using the National Provider Identifier for Health Care Workforce Evaluation

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Abstract

The establishment in recent years of a National Provider Identifier (NPI) offers a new method for counting and categorizing physicians and other health care professionals involved in clinical care. In this paper, I describe how the NPI is assigned, the information collected in association with assigning the NPI, potential ways to enhance information on health professionals through data linkages using the NPI, and how the assessment of the health care workforce could be improved by requiring health care professionals to update their information as a part of maintaining their NPI.

Keywords: Health Workforce, Distribution, Incomes, Training, Administrative Data Uses

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Introduction

The passage and implementation of the Affordable Care Act (ACA) has increased attention on the health care workforce and has raised questions about whether there will be an adequate number of physicians and other health professionals to respond to an anticipated increase in demand for health care services. (Petterson et al., 2012). The U.S. does not have a standard method for determining the size, specialty mix, and geographic distribution of the physician workforce. However, the establishment in recent years of a National Provider Identifier (NPI) offers a new method for counting and categorizing physicians and other health care professionals involved in clinical care.

As a part of the Health Insurance Portability and Accountability (HIPAA) law passed in 1996, Congress established the requirement for a unique health care provider identifier to facilitate electronic transmission of claims and other health care information (Centers for Medicare & Medicaid Services, 2006). The Centers for Medicare & Medicaid Services (CMS) was given the responsibility for assigning NPIs and began issuing them in 2006. CMS's role in issuing NPIs is independent of its role as a payer for Medicare services. Providers, regardless of whether they bill Medicare for services, are required to have an NPI to transfer claims and other health care information electronically. The requirement of an NPI applies to all health care professionals involved in clinical care who are eligible to bill insurers for health care services. An NPI is permanently associated with a specific individual regardless of any changes in practice location or additional specialty training. Separate NPIs are used to identify organizations, such as a group practice, as well as individual clinicians, such as a physician, who may bill for a health care service.

National Plan and Provider Enumeration System

A provider applies for an NPI using the National Plan and Provider Enumeration System (NPPES). The application requires an individual to provide name, credentialing degree, gender, date of birth, birth location, social security number, business tax identification number, business address, business phone, license number, state where license was issued, and one primary—as well us up to two secondary—provider taxonomy codes, which specify the type and specialty of the provider. All of the information collected by NPPES is self-reported and CMS attempts to verify only two things: (1) the provider's social security number and (2) that the provided business address is valid. CMS does not verify whether the provider actually works at the submitted business address, and CMS does not attempt to verify the provider's self reported specialty.

Much of the supplied information, including the self-reported specialty taxonomy codes, is available in a searchable public database (National Plan & Provider Enumeration System, n.d.), and is available for research purposes from CMS through a data use agreement. Once a

provider has an NPI, there are no scheduled requests for updated information; however, providers are instructed to update their information in NPPES within 30 days of a change of required data fields. The degree to which providers update their information is not fully known. The date a change is made is noted in the NPPES record, but there is no indication of how often changes that should have been made were performed. Obsolete information in NPPES does not de-activate or suspend a provider's NPI, and there is no explicit penalty for a provider having out of date information in NPPES.

Linking NPPES data to other CMS datasets that are updated more routinely than NPPES, and to the AMA Masterfile, which receives information directly from training institutions, could potentially improve the validity of the information in NPPES and thereby make it more valuable for workforce analysis. The relevant CMS datasets are the Provider Enrollment, Chain, and Ownership System (PECOS), the Medicare fee-for-service claims, and the Medicaid fee-for service claims. Some of the strengths and limitations of CMS and AMA data available for health care workforce assessment are described below and are summarized in Exhibit 1.

Exhibit 1. Sources of Information for Health Care Workforce Assessment Incorporating NPI

	NPPES	PECOS	Medicare Fee for Service Claims	Medicaid Fee for Service Claims	AMA Masterfile
Purpose of Database	Registry of providers to assign an NPI	Registry of providers eligible to bill Medicare	To process Medicare payments	Documentation of state's processing of Medicaid payments	To support research about and marketing to physicians
Targeted Providers	All health care providers transmitting electronic claims or other health care information	All health care providers eligible to bill Medicare	All health care providers actively billing Medicare fee for service	All health care providers actively billing Medicaid fee for service	All allopathic and osteopathic physicians
Demographic Information	Age, sex, birthplace	Age, sex, birthplace	No	No	Age, sex, race/ethnicity
Location	Practice address	Practice address	Site of billed service	Site of billed service	Mailing address
Source of Specialty information	Self reported	Self reported	PECOS, BETOS, and place of service codes	BETOS and place of service codes	Self reported and GME training program(s)

Exhibit 1 (cont.)

Able to determine if clinically active	No	No	Yes in Medicare fee for service	Yes in Medicaid fee for service	Self reported among voluntary respondents
Able to determine if participating in Medicare or Medicaid	No	No	Medicare fee for service	Medicaid fee for service	No
Publicly Available for Research	Yes	No	Yes	Yes	Yes
Updated	Voluntary requirement with little enforcement	Required every 5 years or whenever changes in practice or malpractice history; changes recorded with date; Denied Medicare claims could stimulate update	BETOS and place of service automatically updated as by-product of billing	BETOS and place of service automatically updated as by-product of billing	US Medical schools, GME programs, and on voluntary basis while in practice

NPI=National Provider Identifier
NPPES= National Plan and Provider Enumeration System
PECOS= Provider Enrollment, Chain and Ownership System
AMA Masterfile = American Medical Association Masterfile

Provider Enrollment, Chain, and Ownership System

In order to submit a claim for Medicare services, a provider not only needs an NPI, but must also be enrolled in PECOS. This applies to physicians, physician assistants, nurse practitioners, certified clinical nurse specialists, clinical psychologists, certified nurse midwives, and clinical social workers. Although there are a number of overlapping variables, the application process for a provider to be entered into the PECOS system, to be eligible to bill CMS for health care services, is independent of the NPI application process through NPPES.

Like the NPPES application, the PECOS application asks providers to report their name, credentialing degree, gender, date of birth, birth location, social security number, business tax identification number, business address, business phone, license number, and state where the license was issued. PECOS asks physicians to provide one primary and up to two secondary specialty codes using a taxonomy that is different than that used in NPPES (Centers for

Medicare & Medicaid Services, 2008). Many, but not all, of the specialty codes in NPPES can be linked to specialty codes in PECOS, but there are a few examples where the same NPPES specialty maps to more than one PECOS category, or where there is a PECOS category without any corresponding specialty codes in NPPES. PECOS also gathers more detailed information than NPPES on the financial arrangement between an individual provider and a practice group or organization, as well as a number of other details about business ownership and history of adverse outcomes with malpractice claims. Prior to entering a provider into the PECOS system, CMS employs a similar approach as is used in NPPES to verify a social security number and that the provider's address is valid, but not whether the provider actually works at that address. For PECOS, CMS also confirms that the reported NPI is consistent with what is recorded in NPPES and requires providers to submit a copy of their license, which CMS attempts to verify by using online tools from their states' medical board Web sites. CMS also confirms that providers are potentially eligible to bill Medicare, by checking their inclusion on the Office of Inspector General's Excluded Provider Listing. As is the case with NPPES, CMS does not attempt to verify in PECOS the provider's self-reported specialty.

Unlike NPPES, providers are required to revalidate their information in PECOS every five years. This requirement took effect with the passage of the Affordable Care Act in 2010 [Section 6401(a)]. Providers must also update their information in PECOS whenever they have a change in location, ownership, banking arrangements, or adverse outcomes of malpractice claims (Centers for Medicare & Medicaid Services, 2012b). PECOS maintains information on the date of any information changes in the database.

Medicare Fee-for-Service Claims

Beginning in May 2008, physicians were required to include their NPI on claims in order to receive payment for Medicare services from CMS. The NPI on the claim is used to link to information available in PECOS, which CMS uses to determine whether a provider is eligible to bill for that service. For example, a claim submitted by a physician would not include information about the physician's specialty; however, that information would be determined by linking the NPI supplied in the claim to the corresponding information in PECOS. The specialty information recorded in PECOS can, in some instances, contribute to determining whether the claim is processed. The denial of a payment by CMS due to a provider having the wrong specialty code recorded in PECOS could potentially trigger a provider to update the information about specialty in the database. Thus, scheduled updates of information, as well as the linking of information in PECOS to the claims process, makes it more likely that PECOS contains more up to date information on provider specialty than NPPES. The PECOS database is not currently available for research purposes outside of the U.S. Department of Health and Human Services, but CMS could link information on specialty within the PECOS file to that in NPPES to validate the accuracy of what is publicly available in NPPES.

In addition to the PECOS information linked to claims, CMS has access to other information in the claims that can also be used to characterize a provider's specialty. For example, Medicare fee-for-service claims include a field for place of service with categories, such as inpatient hospital, physician's office, emergency room, and a number of other potential clinical sites. CMS also uses a method known as the Berenson and Eggers Type of Service (BETOS) classification system (Centers for Medicare & Medicaid Services, 2012a) for grouping health care procedure codes (HCPCS) in Medicare claims into service categories. The alignment of the BETOS classification scheme is more specific for some specialty areas than others. For example, the BETOS bundle of billing codes associated with ophthalmology procedures is used relatively uniquely by someone trained as an ophthalmologist, whereas the BETOS bundle of office visit codes for new or follow up visits is relatively non specific and likely to be used by providers with a wide range of specialty backgrounds. Using the NPI to link information on billing patterns with specialty information in PECOS can enhance the understanding of a provider's specialty. For example, a self-reported internist in the PECOS system who has a very high proportion of Medicare claims generated from the inpatient hospital setting might be more accurately characterized as a hospitalist than a primary care physician. PECOS does not otherwise include hospitalists as a separate physician specialty category. While place of service codes and the BETOS classification scheme are promising research approaches for workforce analysis, there are presently no standardized decision rules for classifying a provider's specialty based on either of these strategies.

Since Medicare primarily serves an elderly population, claims from pediatricians, obstetrician-gynecologists and other physicians who do not engage in the care of the elderly will be under-represented in these records. Physicians who exclusively provide services in fully capitated managed care arrangements will also be disproportionately under-represented. Beginning with services delivered in 2012, Medicare managed care plans (Medicare Advantage) are required to submit encounter data to CMS that includes an individual provider's NPI. Plans have 13 months from the date of service to submit data to CMS that is comparable to what is required for fee-for-service claims. Assuming that this is done in a valid and reliable fashion, the availability of these data will expand the capacity to evaluate all physicians participating in the Medicare program.

Medicaid Fee-For-Service Claims

The potential to use the BETOS classification is also available for Medicaid fee-for-service claims that are paid by states and submitted as a requirement to CMS. Physicians who bill Medicaid, but not Medicare, as might be the case for many pediatricians and obstetrician-gynecologists, may not be in the PECOS system. However, for many of these providers, it may be possible to use the NPI in Medicaid claims to link to the specialty information in NPPES, and to use this information either alone or in combination with procedure and place of service codes in the Medicaid claims to characterize these providers' specialties.

Medicaid claims, like Medicare claims, will disproportionately under-represent those physicians who deliver services through managed care. The penetration of Medicaid managed care varies by state, but the physicians who provide Medicaid services through fee-for-service as well as managed care could be observed in claims data. A second limitation of using Medicaid claims as compared to Medicare claims is the lag time in the availability of the data. Medicare claims are typically available more rapidly than are Medicaid claims that are reported to CMS from each state and territory. For example, as of October 2012, complete Medicaid fee-for-service claims were available for only 34 of the 50 states; at this same point in time, Medicare fee-for-service claims were available through the first quarter of 2012. Plans are underway at CMS to increase the speed at which states can report Medicaid claims to CMS, but at this point Medicaid claims reporting lags far behind Medicare claims reporting. Finally, some states continue to process some Medicaid claims using organizational NPIs without also requiring an individual provider NPI. This, along with missing claims for providers who only see Medicaid managed care patients and the lag time on processing and reporting claims, limits some of the usefulness of Medicaid claims for supporting an assessment of the physician workforce.

American Medical Association Masterfile

Beyond CMS, there is the potential to use a provider's NPI to link to private datasets that could be useful for health care workforce assessment. For example, the American Medical Association (AMA) Masterfile began to incorporate the NPI into its database in 2010. The Masterfile attempts to be a comprehensive registry of all physicians trained in the United States. The Masterfile captures information from institutions on individuals at the time that they enter medical school in the United States or, in the case of international medical graduates, when they enter graduate medical programs for residency or clinical fellowship programs in the United States. By relying on institutions to help enter physicians into the database and to update the information through their association with different sponsoring institutions, the Masterfile is able to capture detailed information on physicians' training history. However, once physicians leave the training environment, the Masterfile is limited in its ability to update information about physicians; it relies primarily on physicians voluntarily completing questionnaires to update information about their practice and location. As a result, there are concerns that the Masterfile includes significant amounts of obsolete information about the practice location of physicians and counts physicians as being in active practice after they have either retired or died (Staiger, Auerbach, & Buerhaus 2009). The Masterfile asks physicians to report on the relative amount of time they spend in various activities, including clinical practice, but non-response to the questionnaires undermines some of the usefulness of this information.

Improving Data for Workforce Evaluation

The lack of an accurate comprehensive health care workforce database may undermine the ability to monitor policies designed to improve access to care and to intervene when necessary to

address barriers to care. The AMA Masterfile has been the most widely used data source for health care workforce studies, but NPPES and the associated NPI could prove to be more useful over time. NPPES is a public resource that is currently less expensive to access than the privately owned AMA Masterfile and, unlike the AMA Masterfile, NPPES includes not only all active physicians, but also all active non physician clinical providers.

Neither NPPES, nor the AMA Masterfile, has an adequate system in place to assure that the information is up to date. The accuracy of these data sources decline as the providers age and make choices about their work life that may not be updated in the records. The ability to use the NPI to identify and link individuals across federal and private datasets may make up for some of these limitations, but without a clear gold-standard among these datasets, it may be impossible to determine which information is accurate and to get definitive answers to some important workforce questions.

CMS has an opportunity to improve NPPES as a health care workforce database, by routinely performing crosschecks among its own data and by requiring timely updates of information in NPPES along the lines of what is done in PECOS, where providers must revalidate their information at least every five years. The quality of the NPPES data could also be enhanced by developing additional validation checks, such as one regarding a provider's self reported specialty. Information available from the AMA Masterfile or from credentialing bodies could assist CMS in knowing whether a provider is trained and board certified in a self reported area of specialty.

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