Utilizing the Axon Registry® for quality improvement

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Abstract

In 2015, the American Academy of Neurology began development of a clinical quality data registry now known as the Axon Registry®. The data collected by the Axon Registry and reported back to participants include performance on a number of quality measures relevant to neurology practice. While the Axon Registry may serve any number of needs for neurology practices, the essential function of the registry is to inform neurologists regarding the quality of their care and provide them with a tool to establish not only performance baselines but progress toward improved quality of care. This article includes 2 case studies of how the Axon Registry has been implemented in neurology practices to date. In the future, implementation of patient-reported outcome data and additional outcome measures will be necessary to expand the reach and effectiveness of the Axon Registry as a quality improvement tool.

In 2015, the American Academy of Neurology (AAN) began development of a clinical quality data registry known as the Axon Registry®.¹ The Axon Registry is a prospective data collection tool that systematically collects and aggregates data for review and analysis. The primary purpose of the Axon Registry is to provide participating neurologists with feedback on the quality of care delivered to patients.² The data collected by the Axon Registry and reported to participants includes performance on many quality measures relevant to neurology practice.

In addition, participation in the Axon Registry provides a number of other benefits to practices. In 2016, the Centers for Medicare and Medicaid Services (CMS) approved the Axon Registry to act as a qualified clinical data registry, allowing participating practices to report performance in all relevant domains of its Merit-Based Incentive Payment System program. The American Board of Psychiatry and Neurology has designated Axon Registry participation as sufficient to satisfy several Maintenance of Certification requirements, including part IV PIP and 8 credits of part II self-assessment. Axon Registry data may prove useful to practices when negotiating with payers regarding value-based contracts.

The essential function of the registry is to inform neurologists regarding the quality of the care they provide their patients. In this capacity, the Axon Registry can serve as a vital feedback tool to practices as they work to improve performance on quality measures. The purpose of this article is to highlight experiences of some early Axon Registry participants who have used the registry to improve quality of care in their practices.

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In brief, the Axon Registry is a neurology-specific prospective data collection tool designed primarily to support quality improvement.

Overview of the Axon Registry

The structure of the Axon Registry has been previously described.^{2,3} In brief, the Axon Registry is a neurology-specific prospective data collection tool designed primarily to support quality improvement. The pilot phase began in May 2015 with wider access to US AAN membership in 2017. In the early stages of implementation, a variety of practice types were included in the Axon Registry to ensure its viability in different practice types, sizes, and settings. The registry now has 33 different integrated electronic medical record (EMR) systems, covers all practice types (ranging from solo neurologists to large academic departments), and is operational in 41 states. There are over 1,200 providers currently participating in the Axon Registry, which includes 1.3 million patients and over 4 million patient visits. Participating practices map relevant EMR data in collaboration with the registry vendor (FigMD). Data elements include patient demographic data as well as elements from other electronic health record (EHR) fields needed to inform performance on included quality measures. Validation of practice-level data occurs through an iterative review process between the practice and the vendor to ensure measure calculations accurately reflect the clinical record. Quality measure performance data are extracted automatically from the practice EMR and are subsequently delivered to the registry automatically or through periodic data pushes. At the beginning of the pilot phase, the Axon Registry included 17 quality measures, growing to approximately 40 measures by the end of 2017 (figure 1).⁴

Practices have access to quality measure performance through an online user dashboard (figure 2). The dashboard includes all measures mapped by that practice, and allows the practice to view measure-level, provider-level, and practice-level performance over time. Practices own and have access to identifiable, patient-level data contained within their dashboard, allowing identification of specific patients for whom quality measures were not satisfied. Data are de-identified at the database level, and practices do not have access to data from other practices or patients seen elsewhere.

The AAN distributes a user experience survey to Axon Registry participants annually, covering quantitative and qualitative measures of satisfaction with registry participation. The Axon Registry user meets monthly to serve as

a venue to discuss registry-related topics. A comprehensive description of neurology quality of care will be described in a forthcoming article.

Case studies in practice improvement

The following case studies describe 2 applications of the Axon Registry as a practice quality improvement tool.

Combined strategy to improve quality and risk scoring

Dent Neurologic Institute is a high-volume outpatient neurologic clinic in Buffalo, New York, that employs 25 neurologists and 35 neurologic nurse practitioners and physician assistants, representing multiple subspecialty divisions. The practice was an early participant in the Axon Registry, with a primary goal of improving understanding of and performance on specialty-specific quality measures. In addition, audits by Medicare Advantage payers revealed that providers in the practice were not capturing the clinical severity and complexity of their patients as measured through ICD-10-CM coding. The inadequacy of this risk coding performance had become especially problematic in commercial payer relationships that have used episode grouper software to compare risk-adjusted cost and quality among peers. These “quality vs cost” performance scores take the form of Medicare’s Quality and Resource Utilization Report and are expected to be used to define preferred networks, fee scheduling adjustments, and capitation models.

Shortly after installation, the measure performance scores on the Axon dashboard were surprisingly poor. The practice implemented several interventions, which included monthly scores from the registry emailed directly to each provider to give feedback on performance and to help promote improvement. A Registry performance summary was included

Figure 1 Measure implementation in the Axon Registry

Figure 2 Axon registry dashboard

in a monthly report card, which includes all other quality metrics, such as report turnaround, productivity, survey data, and coding compliance. Quarterly chart reviews were put in place to ensure the data reported from the Axon Registry accurately reflect what the provider documents. Insights from higher-performing providers were distributed to others in the practice.

In addition to these measures, practice leadership implemented special provider educational sessions and tools. Examples include the creation of a template for each disorder and simplified hard copy guides to help remind providers to record essential observations. An example of the effect of the intervention on quality performance is provided in figure 3. Performance on risk scoring improved as well,

allowing more accurate assessment of patient complexity by third parties.

If a provider continued to have trouble performing and documenting the action needed in a particular quality measure, practice leadership provided additional support: a scribe or billing specialist.

Axon Registry measure performance scores for individual providers and the group as a whole are monitored as part of an integrated continuous quality improvement program. This systematic approach to quality improvement has captured the attention of local payers, who appreciate nationally developed specialty measures that can be benchmarked, thereby expediting the development of new payment models.

Figure 3 Example of performance of case 1

Figure 4 Creation of a macro used for quality improvement

#268: Epilepsy: Counseling for Women of Childbearing Potential with Epilepsy	<ul style="list-style-type: none"> Female Age: 12-44 Dx: Epilepsy 	ECC	Process	<p>Preventive Medicine: > Counseling</p> <p>1.) Click the "Notes" cell to the right of "Communication to patient"</p> <p>2.) Click the "Notes" cell to the right of "Patient with epilepsy counseled on child..."</p> <p>3.) Select "Yes" and select the "Done" button</p>
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Using templates and patient engagement to improve measure performance

Texas Neurology is a comprehensive outpatient neurology clinic in Dallas, consisting of 12 neurologists, 9 advanced practice providers, and a social worker. The practice chose to be an early participant in the Axon Registry primarily to identify areas of improvement in quality measure reporting and to facilitate adherence with evidence-based guidelines.

Prior to participation in the registry, practice leadership and frontline providers lacked a tool to ensure quality measure reporting and clinical guideline compliance. Therefore, the practice implemented an initiative.

Therefore, after enrolling in the Axon Registry, the practice implemented an iterative approach to reviewing and improving performance on the quality measures, which included input from the group's various subspecialists. Providers identified concerns with the potential for additional clerical burden associated with quality data entry into the electronic medical record. In response, practice

leadership created disease-specific appointment types paired with previsit questionnaires. These questionnaires, several of which were developed by the AAN, covered a variety of subspecialty areas including epilepsy, multiple sclerosis, and sleep medicine, and led to vastly improved data collectability and time savings for the providers by not taking appointment time to complete the questionnaires. The appointment notification process was modified to include a reminder for patients to complete a previsit questionnaire prior to visit. Electronic kiosks were also provided as part of the strategy to increase patient-reported data for those patients without web access.

Practice leaders, working with providers, developed documentation templates and order sets to ensure the data were recorded in a manner that could be used easily in the Axon Registry (figure 4). As in case 1, the practice created monthly data reviews to assess performance at the provider level, as compared to benchmarks at the practice, CMS, and Axon Registry levels. Internal validation consisted of reviewing 5 patient records for whom performance was not met. If the information was in the source data, notification was sent to

Figure 5 Improvements over time for querying of falls

Validation of the data in Axon Registry at the database level has recently been completed and represents an important step to ensure the data are accurate.

Axon as part of the mapping process. Once accuracy and validation of the data was ensured, the results were shared with the neurologist and clinical support staff with guidance to support improvement for that measure. When any measure was below a benchmark, analysis of barriers generally led to refinements in workflow. The measure would remain on a watch list until the performance benchmark was met. Examples of improvement varied depending on the measure.

Incremental improvements in scores (figure 5) occurred with this targeted approach. The providers also reported improved efficiency in workflow as these data capturing tools were implemented across the organization. This simplified the development of data capture tools and educational aids for use by clinical support staff and providers. Other interventions thought to be successful included development of reminder tools and clinic flow change to help providers in remembering how and when to perform the activity as written in the quality measure. The Axon dashboard results are reviewed as part of Texas Neurology's broader continuous quality improvement program. These data, along with commercial payer quality reports, CMS Quality and Resource Use Reports, and participating Accountable Care Organization cost and quality reports are reviewed and used as part of a formal strategy to assess and improve "value and the quality of care" across the organization. Similar to the first example, performance data on the quality measures are prepared for each provider. On a monthly basis, each provider reviews the data and leadership assists in developing a strategy for improvement.

Discussion

The Axon Registry^{2,3} can be used for quality improvement by providing neurologists performance data on existing neurology quality measures. While timely, valid data are essential for quality improvement,¹ data collection can be a burden for practices and a barrier to quality improvement.⁵ Although a structured approach to EHR data entry is useful for both quality improvement purposes and research needs for data collection,⁶ this approach is not always feasible and can limit reporting of unique patient characteristics. These case studies illustrate how Axon Registry data are used to improve the care provided as it relates to performance on quality as well as other practice management measures. Being able to capture the entirety of the EHR is an important advantage for neurology providers in allowing for limited additional work.

Validation of the data in the Axon Registry at the database level has recently been completed and represents an important step to ensure the data are accurate. Improvements in data reporting and ease of transfer will further assist in a streamlined process. As the Axon Registry matures, more anticipatory planning by providers entering data into the EHR will ease workflow.^{6,7} The automated data extraction function of the Axon Registry is a unique feature among quality and practice management tools since many registries require manual entry of data, which can be labor intensive and require additional personnel.⁶⁻¹⁴

In the future, implementation of patient-reported outcome data and additional outcome measures will be necessary to enhance the utility of the Axon Registry as a quality improvement tool. Through the Axon Registry, the AAN remains committed to improving the lives of patients with neurologic illness and supporting its diverse population of members. It will be important for the AAN to continue the development of the registry as an accessible tool available to neurologists for quality improvement.

Author contributions

A.D. Patel: drafting/revising the manuscript, study concept or design, analysis or interpretation of data, study supervision. J.V. Fritz: drafting/revising the manuscript, data acquisition, study concept or design, analysis or interpretation of data, study supervision. D.A. Evans: drafting/revising the manuscript. K.B. Lundgren: drafting/revising the manuscript. K. Hentges: drafting/revising the manuscript. L.K. Jones: drafting/revising the manuscript, data acquisition, study concept or design, analysis or interpretation of data.

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speaker honoraria from and serves on speakers' bureaus for AAN and Genentech; serves on the editorial review board for *MGMA Connection*; and is Chief Executive Officer for Texas Neurology. K.B. Lundgren is employed by the American Academy of Neurology, supporting the Axon Registry. K. Hentges is employed by the American Academy of Neurology, supporting the Axon Registry. L.K. Jones serves on the editorial board of *Neurology: Clinical Practice*, receives publishing royalties for *Mayo Clinic Neurology Board Review* (Oxford University Press, 2015), has received teaching honoraria from the American Academy of Neurology, and serves as the voluntary chair of the American Academy of Neurology Registry Committee. Full disclosure form information provided by the authors is available with the full text of this article at Neurology.org/cp.

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