

Political obstacles can also prevent stakeholder groups from reaching consensus on improving and expanding APCD infrastructure. For example, providers may object to payers reporting data about their practices and may doubt that the data will accurately reflect prices and quality.⁶⁴ Also, providers currently have few incentives to share their data⁷¹ if they are not in a mandatory reporting State, because very few clinicians or administrators are trained in how to use data and information to identify and address gaps in care.⁶⁸

Large, multistate insurers may become concerned about the administrative costs of complying with various State database requirements, particularly in States with strict medical-loss ratio standards.⁶⁴ Finally, consumers may be concerned about the privacy and security of their information, despite numerous safeguards in place.²⁷ Therefore, it may be difficult to reach consensus on the best ways to expand APCD data collection and use.

Methodological Issues Pertaining to Use of APCD Data for Measurement

One of the main advantages of APCDs are that they are sources of comparable, population-based data that can support measurement at multiple levels of care (population, health plan, hospital, provider, and patient), across settings, and longitudinally across time. Different types of measures can be supported through APCD data, including utilization, cost, quality, efficiency, and population health measures.

All existing State APCDs currently include utilization measures, and most also address cost of care. Quality, efficiency, and population health measures are somewhat less prevalent in the current landscape, likely in part due to stakeholder interests. Several States also publicly report measures using APCD data. As more States develop APCDs and public reporting Web sites based on APCD data, it is critical that sites contain valid measures relevant to stakeholders and feasible to implement on a large scale.

Discussed below are potential methodological issues in using APCDs for measurement.

Key Methodological Issues for Measurement Using APCDs

- Inadequate measurement science that may threaten the validity and reliability of measures
- Measure specifications: Lack of standardization of measure concepts and specifications
- Measure implementation: privacy concerns, denominator deficiency, difficult or inaccurate provider attribution, inadequate risk adjustment, and provider reluctance to participate in public reporting initiatives
- Measure gaps: methodological gaps and gaps in existing measures

Issue 1: Inadequate Measurement Science

Ensuring measure validity and reliability is a critical step to ensuring successful measurement and price transparency programs using APCD data. States with active APCD measurement programs have guidelines governing the choice of measures implemented using APCD data.

Examples of guidelines include:

- Using nationally accepted standard measure sets when possible,
- Requiring that a measure has empirical evidence that it is a valid representation of the dimension of care it purports to represent, and
- Requiring that a measure provides stable and reliable information and that the measured entity is associated with a significant amount of the variance in the measure.¹⁴

However, in some areas, nationally accepted standardized measure sets are not yet widely available, and there are challenges in developing validated measures.

Developing cost measures is particularly difficult, because the definition of cost varies. For example, some cost measures may use charges and others use payments or measures of relative resource use, such as relative value units (RVUs).¹⁴ In addition, cost metrics vary according to the perspective of the user.⁷⁴ Cost to a health plan is the cost of production plus a provider's overhead margin. On the other hand, cost to purchasers and consumers includes health plan cost plus the health plan's margin. Each different frame yields a different answer on cost of care. In addition, fragmentation in the health care system across all levels can hinder the implementation of meaningful cost metrics.

Standardizing the data collection for cost metrics at a high level (State or national) can help address such issues. Other innovative approaches come from the research literature. Levit, et al. describe a method of calculating price-to-charge ratios rather than the more common cost-to-charge ratio, validating the consistency of this approach with data from Medicare and Marketscan commercial insurance data.⁷⁶ Speir, et al., describe an approach to calculating the additive cost of complications after coronary artery bypass surgery.⁷⁷

Reliability of measures is also an important part of evaluating whether a measure is scientifically acceptable. Since APCDs contain claims data, some inherent unreliability of the data occurs due to factors mentioned above in the section on barriers to using APCDs for measurement (missing data, lack of data standardization, etc.). Another challenge to reliability is ensuring that sample sizes are sufficient for accurate reporting at the level chosen. Sample size is particularly difficult for provider-level measures, which are discussed in more detail below.

Finally, measures need to reflect something meaningful to providers or patients and respond to interventions intended to improve care, to encourage providers to participate and engage in quality improvement.¹⁴ Chosen measures should also show evidence of a significant amount of variation at the measured level.

Some quality measures in use have little or no variation across providers and therefore are not very helpful in discerning differences. For example, the Joint Commission's core hospital measure for acute myocardial infarction includes prescribing aspirin at discharge. This measure has a compliance rate of 99 to 100 percent, so it cannot be used to distinguish high-quality from low-quality hospitals for acute myocardial infarction care.

Issue 2: Measure Specification

Even if valid and reliable measures are available for use with APCDs, one of the biggest barriers is variation in measure specifications, even for the same measure concepts. For example, the Medicare Shared Savings Program and the Medicare Advantage Star Ratings both require measurement of prevention, patient experience, and safety. However, the Medicare Shared Savings Program rates providers based on 33 measures, while the Medicare Advantage Star Ratings use 36 different measures to rate provider quality in these areas.⁷⁴

Harmonizing measures is challenging due to a lack of consensus about the best measures to use. Establishing core metrics that are useful for multiple purposes such as clinical care, population health management, reporting, and payment programs may also be helpful.

Additional barriers exist in terms of developing measure specifications for cost measures. As noted above in the discussion of limitations to episodes of care in the section “NQF Resources on Episodes of Care,” calculating the cost for an episode of care is complex. It is difficult to specifically determine whether services are related to the episode (even when there is a diagnosis code suggesting it is). For patients with multiple chronic diseases, defining which “episode of care” to use may be difficult.

In addition, most cost measures are site, service, episode, or condition centric, which may not consider the total cost of care for a patient over a period of time. Development of global payment measures, such as bundled payments and patient-centric measures, may help standardize cost measurement.³⁷

Issue 3: Measure Implementation Issues

Implementation of measures presents a variety of challenges, including concerns about privacy, denominator deficiency, provider attribution, risk adjustment, and actionability. Providers, in particular, may not share data if they do not believe that the measures being reported accurately reflect their practice.

Data privacy and security present challenges to successful implementation of a measurement program, because health plans may not want to share proprietary information, and providers and patients may worry about the public release of individual-level data. All States with APCDs have data security protocols that may include not collecting direct identifiers and adopting encryption methodologies. Some, such as Minnesota, do not release their data to external organizations.^{1,8}

Data security protocols, while effective in protecting privacy, may limit the usability of data for measurement, particularly for researchers or for making comparisons across States. One approach to increasing data usability while protecting privacy may be to use distributed data models, in which individual-level data stay with the data owner but aggregated information and measures can be submitted to the State.^{5,74}

As discussed above, one barrier to accurate measurement, particularly at the practice level, is ensuring that each provider has a sufficient denominator. Individual physicians see relatively small numbers of patients with any particular condition. These numbers can be reduced because the claims data used to generate quality metrics are collected and maintained separately by different health plans.⁷²

APCDs themselves, given data submission from multiple health plans, may help overcome the sample size issue with providers. Without a universal provider directory, however, this benefit cannot be realized, because it is not possible to attribute a provider's patients from different plans to that individual provider. To avoid the small denominator problem, one also could choose measures for common conditions and implement measures at the plan, community, or State levels.

Provider attribution for measurement has also proven to be a challenge. As discussed above in the data aggregation section, provider identifiers are often missing or inaccurate or plans have very loose rules about which identifiers can be used. Attribution methods that can be applied to both cost and quality measures also need to be developed, to ensure that a physician's performance in those two areas is assessed based on the same panel of patients.⁷²

One of the main challenges to using APCD data for measurement is appropriate risk adjustment so that comparisons can be made across populations and providers. Measures need to be risk adjusted to avoid disincentives to treat more complex, costly patients, particularly patients with multiple chronic conditions. Risk adjustment is particularly important for cost and utilization measures, as it can explain about half of all practice-level variation.⁷⁸

Various methods can be used for risk adjustment. For example, Colorado uses several risk adjustment models from 3M™ Health Information Systems, including:

- All Patient Refined DRGs (diagnosis-related groups),
- Enhanced Ambulatory Patient Grouping System for health care services, and
- Clinical Risk Grouping Software for population-based comparisons.⁷⁹

Using these risk adjustment methods has allowed the Colorado APCD to determine an average illness burden score to compare utilization and cost across patient populations, such as at the county level.

Finally, measures need to provide actionable information and a framework for improvement to realize substantial gains in quality, cost, utilization, efficiency, or population health.⁷⁴ For example, process measures capture the percentage of time providers conform to standards of clinical care. Public reporting may increase adherence to national guidelines and, in turn, improve health-related outcomes in patients. However, adherence requires timely feedback to clinicians so that they can change behaviors in real time.

In addition, providers need to be invited into the data auditing process and offered:

- Notice that new scores are forthcoming,
- An explanation of methodology and data,
- Opportunities to review the data and appeal the results of performance analyses, and
- An independent external review process to encourage provider participation and action based on the measures.⁶⁸

Issue 4: Measure Gaps

Limited discussion was found in the literature and in the environmental scan regarding measurement gaps related to the scope of this project. While examples of gaps identified during our review are provided here, this is not a complete list of existing methodological gaps or gaps in available measures.

Measures validated by NQF and other national organizations are widely available, and most States rely on such measures as the basis for their measurement programs. However, in some areas, few validated measures exist or those that exist are inadequate or proprietary, making identification of useful, accurate, and meaningful measures to implement a challenge.

Cost measures used, particularly those used for State price transparency Web sites, vary substantially, and many measures may not have been validated yet. Since it is critical to ensure that valid cost measures are used to avoid the unintended consequence of physicians avoiding high-cost patients and causing disparities in care, this area needs much work.⁴⁸ For example, there is considerable variation in the reporting of cost at the State level. For cost estimates given by New Hampshire's price transparency Web site (<http://nhhealthcost.nh.gov>), costs are based on the median allowed rate by insurers and the median out-of-pocket costs for patients. On the other hand, Virginia's price transparency Web site (<http://www.vhi.org/healthcarepricing/>) reports the average allowed amounts for services.

Most Web sites do not display cost and quality data in the same place, making it difficult for users to assess value. Some cost measurement Web sites have also used episode groupers to calculate costs, but these measures are limited in that they report costs for episodes as though they occur in patients without comorbidities. A more "person-centric" approach has been called for, but the steps to implementation were not described in the resources reviewed for this report.

Finally, in terms of implementation, States need to consider how best to display data, as data display can have a significant impact on consumer understanding and use of the reports.⁴¹ States should also develop criteria for redacting measures and excluding them from publications, if warranted.

Methods for calculating patient out-of-pocket costs vary as well, as the amount depends on the benefit design structure. Only two States, New Hampshire and Colorado, attempt to estimate out-of-pocket costs for patients. Most consumers have access to insurer sites, but the information on those sites is proprietary, so consumers would not be able to shop for prices between plans, only within a plan.

In considering how to fill the out-of-pocket costs measure gap, a useful resource is the Pacific Business Group on Health's summary sheet of the structures of consumer-facing cost measures offered on the major insurers' proprietary Web sites (PBGH Consumer Decision Support Tools, found at http://www.pbgh.org/storage/documents/PBGH_Cost_Calc_Summary_Grid.pdf). Reviewing the existing options for how to develop and present these measures would allow a deeper discussion about the relative merits of one approach over another.

Provider-level measures are another gap that needs to be addressed. As discussed above in the section discussing difficulties with data linkage and aggregation, provider attribution is

challenging, and providers may not care for enough patients with a given condition to reliably assess quality of care. Establishing a Master Provider Index may help address this issue. Furthermore, APCDs do not contain data to measure health status or outcomes, so calculating value purely from APCD data may be very difficult.

Finally, methodological gaps also require attention as States increasingly use APCDs for measurement, particularly in terms of evaluating resource utilization and cost. For example, it is not clear how to account for complications of care, particularly when discussing chronic disease care. Does an acute myocardial infarction count as a new episode of care or does it count toward the year's expenditures for management of coronary artery disease?

Accounting for total utilization also may be a challenge since different services have different levels of intensity (e.g., lab test versus surgery) and different geographic areas have different prices. Creating a weighted sum of services, for example, could help overcome this barrier.⁶ Each service can be weighted by a standard national price for that service to remove the effect of different prices across geographic locations and derive an aggregate measure of services. Of course, this approach is only desirable for utilization analyses. If the focus is on cost of care, then both utilization and amounts paid are relevant, so one would not want to use a standard price list.

The above measurement gaps are only examples of the significant challenges States face when trying to use APCDs to measure health care cost, quality, and utilization. We anticipate that the detailed measure review undertaken during measure inventory development will help reveal additional measure gaps and information to assist policymakers, measure developers, researchers, and others in filling those gaps.

While considering these barriers, it is useful to note that as APCDs become more developed and the data become more detailed (e.g., with the creation of universal provider directories), some use cases may become more common. A recent APCD Council report describes the staged or tiered approach several States have taken to releasing analytic products, starting with the release of statewide or county-level measures before the release of more granular analysis (e.g., by provider or payer).⁵³ This approach was also described by TEP members in the February 2015 meeting. The approach allows early public reporting of policy-relevant data from APCDs for State decisionmakers, while stakeholders address the technical and political barriers described above to allow more granular reporting.

Conclusion

While it is clear that much remains to be learned to maximize the potential of APCDs and to reduce the difficulty and cost of using them, national momentum is building behind developing measures to be used with APCDs and defining the business cases for maintaining APCDs. This report provides an overview of both the potential for APCDs to generate the information needed to improve care, as well as caveats to keep in mind while doing so.

The next steps included prioritizing and organizing existing measures identified from sources included within this review. The categories and domains described here provided a structure for undertaking this next step.

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APCD Web Sites

1. **California**. Organizational link: <http://www.chpjis.org/>. APCD but no consumer site yet.
2. **Colorado**. Organizational link: <http://www.civhc.org/>. Public Web site link: <https://www.comedprice.org>. APCD and consumer site with cost data and quality measures.
3. **Kansas**. Organizational link: http://www.kdheks.gov/hcf/data_consortium/default.htm. APCD but no consumer site yet; data consortium.
4. **Maine**. Organizational link: <https://mhdo.maine.gov/>. Public Web site link: <http://www.comparemaine.org/>. APCD and consumer site with cost data, no associated quality measures.
5. **Maryland**. Organizational link: http://mhcc.maryland.gov/mhcc/pages/apcd/apcd_mcdb/apcd_mcdb.aspx. APCD but no consumer site yet.
6. **Massachusetts**. Organizational link: <http://www.chiamass.gov/ma-apcd>. Public Web site link: <http://www.mass.gov/portal/residents/health-safety/choosing-a-massachusetts-health-care-provider.html>. APCD and consumer site with cost data and quality measures.
7. **Minnesota**. Organizational link: <http://www.health.state.mn.us/healthreform/allpayer/>. APCD but no consumer site yet; limited application defined by legislature.
8. **New Hampshire**. Organizational link: <https://nhchis.com/>. Public Web site link: <http://nhhealthcost.org/health-costs-consumers>. APCD and consumer site with cost data, no associated quality measures.
9. **Oregon**. Organizational link: <http://www.oregon.gov/oha/hpa/analytics/pages/index.aspx>. APCD but no consumer site yet.
10. **Rhode Island**. Organizational link: <http://health.ri.gov/data/healthfactsri/>. APCD but no consumer site yet.
11. **Tennessee**. Organizational link: <https://www.tn.gov/hcfa/article/tennessee-health-information-committee>. APCD but no consumer site yet.
12. **Utah**. Organizational link: <http://stats.health.utah.gov/>. APCD but no consumer site yet.
13. **Vermont**. Organizational link: <http://gmcboard.vermont.gov/hit/vhcures>. APCD but no consumer site yet.
14. **Virginia**. Organizational link: <http://vhi.org/APCD/>. Public Web site link: <http://www.vhi.org/healthcarepricing/>. MPCD and consumer site with cost data, no associated quality measures.
15. **Washington**. Organizational links: <http://wahealthalliance.org>; <http://www.ohsu.edu/xd/research/centers-institutes/center-for-health-systems-effectiveness/wa-apcd-governance-information/index.cfm>; <http://www.ofm.wa.gov/healthcare/pricetransparency/>. Public Web site link: www.wacomunitycheckup.org. APCD and consumer site but no cost data.
16. **Wisconsin**. Organizational link: <http://wisconsinhealthinfo.org/>. Public Web site link: <http://www.MyHealthWI.com>. APCD and consumer site with cost data and quality measures.