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Information Technology-Driven Analytics and Data Aggregation for Payment

National Health IT and Delivery System Transformation Summit

Kristine Martin Anderson
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Analytics and Aggregation: Some Definitions to Start

Analytics	Aggregation
Tools to extract actionable information from data and can mean linking existing data to reveal new insights	Linking data (that may reside anywhere) into populations or other groups for purposes of analysis and reporting. Implies existence of standardized linking variables or probabilistic matching

Both analytics and aggregation—long the domain of payors and big data—are being pushed towards the point of care by new demands in patient management, payment design, and cost constraint

Current initiatives in payment reform

New Payment Initiatives Gaining Momentum

- ACO Shared Savings Program and Pioneer Program will include risk-based payments and risk capitation
- Existing integrated delivery networks are acting as test beds for new payment models already
- Multi-payer Advanced Primary Care Practice Demonstration includes options for states to adopt new models beyond FFS including PMPM bonus, shared savings, etc.
- PCMH programs across country include new models of payment including lump sum payments, P4P and other programs
- Preventable Re-admission program proposes to limit payments for preventable readmissions for heart attack, heart failure, pneumonia; future plans to expand the diagnoses further, as well as rules to identify preventable cases
- Hospital Value Based Purchasing proposes to link performance on basket of quality metrics to payments, with goal to move from process metrics to outcomes and patient perspectives, risk adjusted as needed

What it means for Analytics

- Providers and/or ACO team members with new cost management and patient outcome responsibilities will need patient-centered, longitudinal data
  - Identify variation and sources of leverage for clinical improvement
  - Follow resource use across settings of care and eliminate unneeded, high cost processes
  - Define treatment failures as getting care at the wrong level of service
  - Measure quality as improvement in patient using evidence-based care
- Providers will also need analytical tools that manage population health at the point of care
  - Create panels and registries
  - Automate decision support and clinical guidelines, provide evidence for treatment methods
  - Identify individual and group risks, real-time predictive modeling
- Payors will need outcomes-based payment regimens with detailed clinical data and analytical tools for population health management
  - Discover providers with unusual outcomes and/or costs, identify sources of cost risk, identify best practices and evidence of effectiveness

Current state and gaps

GAPS	DESCRIPTION
Patient-centered, longitudinal data for providers/ACOs	• Claims provide largest available pool of data but not fed back to providers in consumable way • Incomplete data for payors hampers interpretation of results (can't distinguish poor care for poor data) • Outcomes are difficult to capture from claims
Analytic tools that manage population health at provider level	• Clinical decision support, automated Clinical Practice Guidelines, automated registries, all lag from vendors
Payor-based analytical tools	• Claims based analyses are mature and well-understood • Increasingly sophisticated ways of linking and mining data have evolved—episodes of care, linking lab data as available, linking external individual or population data • Payors have largely been absent from HIE development, although recent moves by United HealthCare (Axolotl) and Aetna (Medicity) show strong interest
Analyzable clinical data with rich process and outcomes information remains rare despite EHR and HIE adoption and MU push	• Governance and structural disincentives continue to hamper HIE growth • Stove-piped systems, non-standardized data inhibit data aggregation/analytics • Tools for mining unstructured data, using clinical data for outcomes, risk are untested but promise dramatic improvement in predictive power for providers, ACOs, and payors
Source systems remain immature	• Vendor-driven architectures dominate with little true interoperability • Need integrated financial, clinical, supply chain systems to manage costs and understand relation of costs, outcomes, specific providers, hospitals • Highly variable, localized state of EHR implementation and MU

Key issues in analytics

- How much centralization is required to support analytics?
  - How much data is required to be centralized, and for how long? What role will cloud-based analytics play in the short term?
- How much data standardization do we need to support analytics?
  - How much needs to be required and “baked in” via structured EHR data capture, and how much can be applied after the fact with intelligent analytics e.g. Natural Language Processing?
- How much are risk stratification/predictive modeling methods going to help?
  - How robust are emerging risk stratification and predictive modeling methods compared to existing, well understood models? Do we know enough to drive clinical decisions at point of care?
- How will providers and payors collaborate?
  - Will providers use the new payor business models?
  - How much data is enough data? All-or-nothing for true clinical picture?

Reasons for optimism

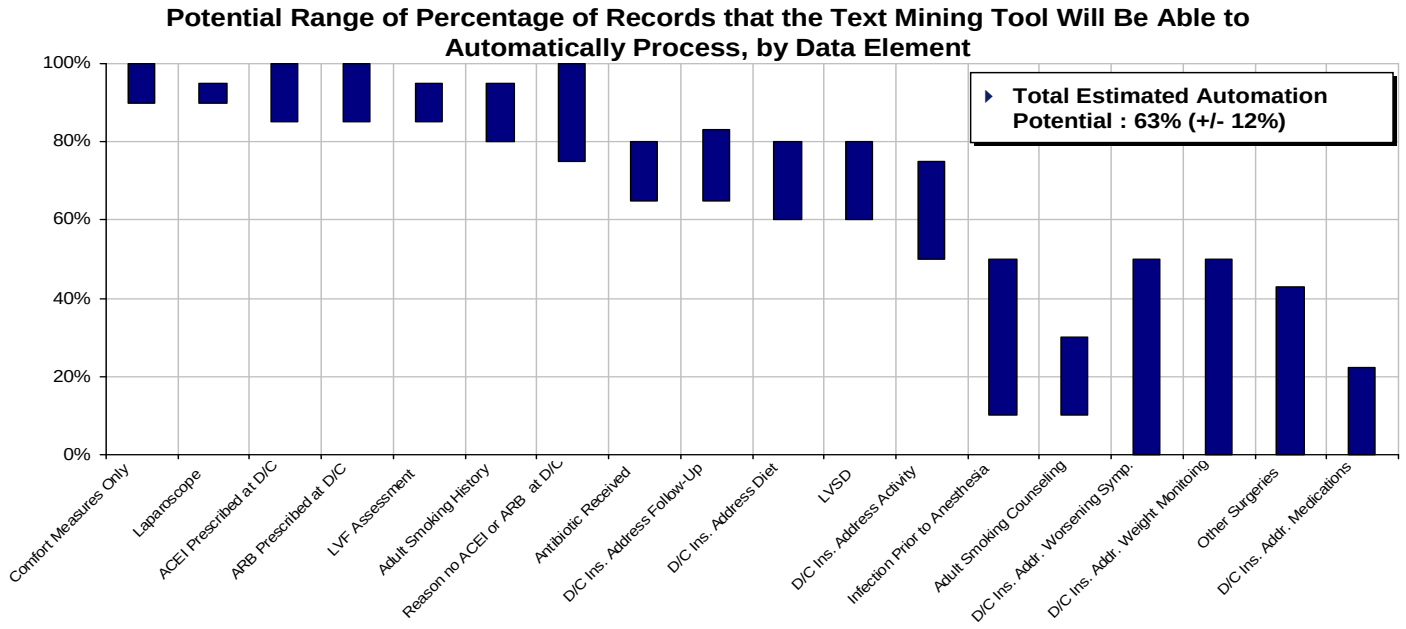
- Many initiatives and organizations are achieving high levels of analytical sophistication
  - Geisinger, Kaiser Permenente, InterMountain Health, Indiana/Regenstreif, VA, Indian Health, others
  - Able to carry out complex large-scale analytics using detailed clinical data and/or combining outputs of EHR with claims data

Veterans Affairs	VA Inpatient Evaluation Center takes data feeds from 138 hospitals with merged lab and demographic data to produce severity adjusted mortality rates for all inpatient care
Geisinger Health System	Using EHRs to identify targets for care improvement and redesign, measure performance and push care guidelines into redesigned workflow. Initiatives include kidney disease, diabetes, CHF, others
Kaiser Permanente	Using EHR data to advance research in osteoporosis treatment, childhood obesity, and genetic and environmental determinants of health

Developing qualitative data extraction methods from EHRs

- Booz Allen EHR text data mining project
  - Worked with a regional health system to explore if current text mining techniques would support extraction of information for quality measures from unstructured text in an EHR
  - Many factors, such as data quality and language variation across hospitals, will affect the performance of an automated system in production

Proof of concept: identified five measures, with 18 data elements from free-text fields. Thirteen demonstrated positive results in automated extraction and accuracy of interpretation. Seven of these data elements had automation and accuracy levels of greater than 85%. The total automation rate across the 18 data elements was 56% and the accuracy of the predictions of 92%.



Beacon Community Technical Assistance

- Under contract with ONC to support the17 Beacon Communities, Booz Allen and Brandeis University are using Medicare data to develop measures to support performance improvement.
- We are collaborating with communities to finalize the clinical quality measure sets and will produce quarterly reports using very recent Medicare data.
- The intent is to provide results re: how each community is performing over time and in comparison to one another and a reference population.

In new payment ecosystem, roles are likely to shift and evolve

Organizations will use analytics to…

Providers	 Manage chronic disease with patient panels, CDS and guidelines; coordinate care with linked data from other systems and providers
Hospitals Group Practices ACOs	 Compare provider performance, optimize care/cost/risks, generate quality metrics, identify population health
Payors ACO	 Create population health risk pools, identify differential outcomes by providers, identify fraud and abuse
Government Society	 Carry out post-market and public health surveillance, compare effectiveness, generate new guidelines

How will patients, purchasers, and other stakeholders use these new data sources and analytical tools?

Contact Information

Kristine Martin Anderson
Senior Vice President
Booz Allen Hamilton
240-314-5790
anderson_kristine@bah.com