



Electronic Health Data Sources: A Comparison

Disruptions caused by COVID-19 - including difficulty obtaining paramedical exams and traditional APS reports accelerated the already active trend by insurers of exploring the use of electronic health data to support both underwriting and claims management. Many companies are now far down the path of researching these tools or have implemented them in production.

For those newer to digital health data, the following is a primer on the different types of data available along with comparisons of their benefits and challenges.

These sources include:

- RX Fill Reports
- Medical Claims data
- Historical Lab Reports
- Electronic Medical Records – Accessed via:
 - Health Information Exchanges (HIEs)
 - Electronic Medical Record (EMR) Systems
 - Patient Portals

We will discuss each of these in some level of detail below.

In evaluating how these tools can be incorporated into an insurance underwriting program or as part of claim determination and ongoing claim management for products such as disability income, long-term care, workers compensation or critical illness, there are many factors to consider. These include cost, type of data available, coverage and completeness of the data. See below for a side by side comparison.

Quick Comparison of Sources				
	RX Fill	Historical Lab	Medical Claims	EMR
Data Updated in Real-time		✓		✓
Rx	✓			✓
Lab Results		✓		✓
Diagnosis Codes			✓	✓
Medical Encounters				✓
Height/Weight (BMI)				✓
Smoking Status				✓
Clinical Notes				✓

There are multiple potential use cases for electronic health data including:

- Adding one or a combination of sources to base underwriting requirements.
- As replacement for traditional requirements such as APS or paramed exams
- Use in strategic situations such as accelerated underwriting
- As a tool in claims adjudication



Each of these use cases presents an opportunity to streamline processes, increase expense efficiencies and deliver a more satisfactory producer and policyholder experience.

Using Electronic Health Data

Deciding which tools to use can be complicated as they are not a one to one replacement for traditional data requirements. Rather, they represent a new data source that can provide insights into the health history of an individual and supplement those obtained through traditional methods. These tools have the potential to improve insurers' mortality or morbidity assessments, transform existing service capabilities and significantly increase the speed of new policy issuance or initial claim determination.

When evaluating whether to use new data sources, some insurers look at them through a traditional lens and may fall into one of two common traps.

Trap 1: *A new data source must have an easily calculated expense saving on Day 1 to be considered. This is often combined with a core assumption that if you switch out an existing data source for a new one, mortality impacts only move in one direction- negatively.*

A complete cost/benefit study should include both the direct savings that can be achieved as well as the indirect benefits that may result. Regarding the former, this can manifest itself by reduced ordering of APS or paramed exams. The latter can be equally, if not more important as the indirect impact of going digital can be significant improvements in producer and client experience, reduced underwriter review time, increased policy placement rates and new sales opportunities. While these metrics are not easily quantified, ignoring them can produce flawed conclusions.

Assuming mortality can only get worse is not a given. Many insurers using digital health data are discovering information likely to result in significant underpriced mortality in their existing portfolios – not a big surprise in newer accelerated programs but also on some fully underwritten cases. The price points of digital data can enable use on many more cases than traditional tools. Additionally, the long-term benefits for having a complete digital repository of the structured health data for study and use in future pricing and valuation must also be considered.

Trap 2: *A new source of data must meet an arbitrarily high “hit rate” before it can be useful in the process.*

While achieving minimum coverage thresholds to justify the operational burdens of onboarding is important, hard and fast rules can be counterproductive. This is particularly true as most sources only charge if usable data is found. Consideration of the quality, cost, speed and trends in coverage are equally important.

Many insurers have historically taken the conservative “wait and see” approach when new technologies or processes first emerge. They then become “fast followers” once something has been adopted by competitors; particularly if it directly impacts their distribution such as by shrinking policy issuance times or streamlining underwriting requirements. Leading companies who are embracing digital data are beyond “toe in the water” small-scale pilots and are moving aggressively to large scale adoption. They recognize the industry landscape has changed, particularly in the wake of the COVID-19 pandemic that has necessitated both a material digital transformation but also produced a tremendous competitive opportunity for those insurers that wish to remain competitively relevant.

The risk of an insurer being left behind is real.



The process of selecting and implementing new data sources can be complex because these tools differ in significant ways from data requirements in use today. It requires considerable lead time to contract and connect with suppliers; establish appropriate data security and privacy protocols; develop risk selection rules for digital health sources; and training of underwriters, claim examiners and other staff.

But the benefits can also be substantial be it in terms of risk selection, reduced expenses, faster policy issuance or claim determination times, and much improved customer satisfaction and engagement.

Additional insights can also be gleaned from testing multiple digital sources on a significant sample of cases and policy types. Each access different data using unique methods. Testing the unique protective value of each can enable development of an optimized data ordering strategy balancing the demands of client and agent experience, operational expense and mortality experience of the portfolio.

Sources of Digital Health Data

I. RX Fill Reports

While well established, they are likely to continue as a key tool in underwriting and can be used in conjunction with newer forms of digital data.

Rx records provide a one-dimensional look at a patient through the lens of their prescription fill history and enable inference of underlying medical conditions. While there is not always a 1:1 correlation from a drug to a medical condition due to issues like off-label uses, the algorithmic tools available to accurately predict underlying conditions have gotten sophisticated over the years and continue to improve over time.

Strengths

- **Coverage** – Market has matured to the point where data is often available on over 90% of applicants.
- **Use** – Strong tool for surfacing information not disclosed on the application.
- **Familiarity** – Carriers have significant experience with Rx data – rules are in place and underwriters are comfortable with its use.
- **Data Structure** – The reports are well structured and suited for algorithmic interpretation.
- **History** – Data has been in use for enough time that credible mortality studies linking patterns of Rx history to mortality are available.
- **Access** – Very fast delivery requiring only attestation of HIPAA form.

Challenges

- **Data Breadth** – Information is limited to an individual's prescription drug fill history. Absent data like medical diagnosis, lab results, height, weight, smoking status, etc.
- **Information Gap** – Excludes drugs administered in most in-patient hospital settings (including some chemotherapy treatments) and items paid for in cash. Details prescriptions filled but not drugs prescribed and unfilled.
- **Data Update Time** – This data is available through the health insurance adjudication process and may take 30-60 days to be available.



II. Medical Claims Data

As a relatively new source, claims reports capture the codes (ICD-9, ICD-10, HCPCS, CPT, or SNOMED) documented by healthcare providers for the purpose of billing and reimbursement to health plans. They provide a valuable tool to uncover material medical impairments not disclosed on an insurance application or discovered via other sources. Coverage is growing over time and hit rates of 25-50% are available with certain data suppliers.

Data will be available if the medical procedures and exams were submitted for health insurance reimbursement through a 3rd party who participates in the life insurance use case.

Strengths

- **Coverage** – Hit rates are moderate but growing quickly
- **Use** – May enable discovery of a “big-miss” mortality assessment due to undisclosed information.
- **Access** – Very fast delivery requiring only attestation of HIPAA form.

Challenges

- **Data Breadth** – Primarily billing diagnosis codes so more likely to raise a red flag than to provide fully actionable information.
- **Data Structure** – Processes need to be developed to handle “differential diagnosis” codes – health insurance claims billed for procedures with a negative result.
- **History** – Unable to do large scale retroactive studies on old cases.
- **Data Update Time** – Available through the health insurance adjudication process and may take 30-60 days to be available.

III. Historical Lab Data

A patient’s historic lab results from tests conducted as part of their medical treatment. Data will be available if lab work was conducted by a laboratory participating in the insurance use case (The two biggest labs in the US are participating).



Strengths

- **Coverage** – Can provide a significant amount of the information traditionally obtained from an insurance lab without the need for a paramedical visit.
- **Use** – Lab data can provide critical information to surface certain impairments and to validate preferred underwriting on accelerated cases.
- **History** – While relatively new to the market, providers here have accessed records to enable credible actuarial mortality studies.
- **Data Update Time** – Typically available within 24 hours of labs being delivered to physician.

Challenges

- **Data Breadth** – No insights on risk factors that do not evidence themselves in lab results. Often missing some typical insurance specific lab values not commonly used in patient treatment including cotinine (smoking status) or HIV status.

IV. Electronic Medical Records Overview

Data extracted from the systems that healthcare providers use to store and share patient health information. Accessed through contractual arrangements with healthcare organizations to provide information pursuant to a valid HIPAA authorization or by utilizing a patient portal tool.

EMR's provide a more holistic look at a patient's medical history including encounters, diagnosis codes, medical procedures, lab results and prescribed medications. Often include height and weight, blood pressure, smoking status and physician notes providing substantial insight into the risk factors even in many complex underwriting situations.

Note – the following strengths and weaknesses pertain to EMR data in general. The next section provides a deeper dive into the individual characteristics of the different types of EMR data available.



Strengths

- **Data Breadth** – Wide range of patient data available often including medical diagnosis with codes, procedures, lab results, medications prescribed, vital signs (height, weight, blood pressure) smoking status and clinical notes.
- **Data Update Time** – Typically available within 24 hours of patient medical encounter.

Challenges

- **Coverage** – Networks are growing and multiple pathways to broader coverage exist, but coverage today is the lowest of the digital sources discussed here.
- **Data Structure** – Less uniformity in data look and feel given the significant number of downstream data sources (Add-on services are available to standardize, normalize, de-duplicate and present with one unified look).
- **History** – Unable to do large scale retroactive studies on old cases.
- **Familiarity** – New look and feel for users and the amount and diversity of data available will require development of more complex rules around their use.

V. Electronic Medical Records- Comprehensive

All EMR data available for the insurance use case is extracted from the Electronic Medical Record (EMR) software utilized at the physician's office or site of care. While there are well over 100 separate EMR platforms in use, several large players such as Epic, Cerner and Allscripts have significant market share. There are several national networks with a mission to enable broader healthcare interoperability such as eHealth Exchange, Carequality and CommonWell. Some vendors tout their affiliations here as a strength, but though these networks may play some future role in the insurance use case, their current contribution of data is minimal.

The most common methods of accessing EMR data for the insurance use case include:

- Utilizing data available through an HIE.
- Through insurance specific interfaces offered by an EMR vendor.
- Via a portal offered for patient use.

Despite their differences, these methods share several things in common:

- Data is extracted from the EMR system in use at the site of care.
- Data is delivered utilizing some variation of a standard healthcare interoperability format (CCDA) known as a continuity of care document (CCD).
- The CCD is stratified into distinct sections such as a Problem List (medical diagnosis like ICD 9, 10 or SNOMED codes), Lab Results, Rx History, Medical Procedures, Vital Signs, Family History etc. Note: Data available to life insurers does not include psychologic history or encounters
- Data is a combination of structured data (diagnosis codes, lab results, vital signs) and unstructured data (physician notes).



- There may be significant data variability and instances of misclassified data do exist.
- Records are available in a machine-readable format such as xml and can be rendered into a human readable document for manual review.

Despite these similarities, there are significant differences between them in the way they access and deliver data. A look at each in more detail.

VI. HIEs

HIE's act as a hub, connecting physicians, hospitals, labs and other healthcare providers to enable sharing of health data for treatment purposes. Often non-profit organizations, HIEs play a critical role in healthcare interoperability usually operating on a regional basis.

HIEs benefit from centralized data governance models. Once an HIE agrees to contribute data for the insurance use case, all physicians who participate in the exchange will do so as well (in rare instances, a handful of physicians may opt-out). This enables very high participation rates in the areas where the HIE operates. Coverage rates of 70% or higher are not uncommon even for HIEs that cover an entire state. Today, all HIEs participating in the insurance use case accept an insurer's standard HIPAA authorization.

Breadth of data providers is another key advantage of HIEs. They provide data from any care providers in the exchange with patient data. In our experience at Clareto, this results in records from over four different physicians per successful search.

This ability to provide data from multiple, unaffiliated providers for a single fee makes HIEs a very economical way to gather large amounts of data on an individual. While success rates for replacing an APS are relatively good, HIEs are also an excellent tool in accelerated underwriting or triage use cases given the breadth of data they provide.

HIEs synthesize data from multiple EMR systems and typically provide summary level information. While usually high in quality, it may lack the intricate detail necessary for a final decision in particularly complex cases.

Data delivery times for HIEs vary from under a minute to two days but there is a distinct trend towards instant release of data.

VII. EMR Vendor Insurance Products

Several major EMR vendors including Epic, Allscripts, Practice Fusion and NextGen currently offer a proprietary product to enable healthcare providers to make records available for the insurance use case. Other EMR vendors are evaluating participation in the use case.

EMR vendor records generally provide the most complete electronic medical data – information is available at a summary level, but details for each physician encounter are often included as well. Encounter level details may be delivered via separate documents (instances of over 100 separate documents occur) but there are products available to consolidate these into a single document to simplify the review process.



Medical information will be available if the physician who has records utilizes a participating EMR vendor **AND** the healthcare provider opts to participate in the insurance use case. The number of physicians participating continues to increase.

Release of records requires evidence of patient consent, but most physicians accept an insurer's standard HIPAA authorization. An increasing number of physicians enable auto-release of records, but many conduct a manual review. Record return service levels span from minutes to several days.

If a patient has received care from multiple physicians who are in unaffiliated practices or who use different EMR systems, separate fees are charged for each record as with a traditional APS.

VIII. Patient Portal

Portal solutions obtain medical records using the patient-facing internet access physicians use to share medical data directly with their patients. They typically require a unique set of patient credentials (i.e. they must supply their username and password) for each healthcare organization or EMR instance.

Introduced more recently, this is a more fundamental paradigm shift than the switch from paper to digital. Here, the client must actively participate in the data exchange versus other sources which operate "behind the scenes" allowing an insurer to access information directly from a data source using the permission granted in the HIPAA authorization.

The coverage potential here is very high given that virtually all physicians offer a portal.

Portal solutions require insurers to develop safeguards to counter the potential anti-selective impact introduced by the risk of selective omission by the applicant/insured with respect to portions of their medical history.

Actual coverage rates will be affected by a client's willingness and ability to share his/her credential(s) and by an insurer's ability to successfully interact with the client to gather this information.

The Federal Government is acting to improve access and data availability via patient portals. New Office of the National Coordinator (ONC) regulations scheduled for 2022 mandate that all of a patient's data be made available utilizing Fast Healthcare Interoperability Resources (FHIR) – a standard data format and elements as well as an application programming interface (API) for exchanging electronic health data. Enforcement mechanisms are not finalized, and these rules could be delayed again due to COVID-19, but many major EMR vendors and healthcare providers are already in compliance.

IX. Conclusion

Healthcare interoperability and data exchange are complex issues, but they lie at the heart of what we do at Clareto. We own and operate an HIE in central Virginia that has been exchanging patient data for over 20 years. We process over 5 million electronic health data requests per month and are connected to major hospital systems across the country as well as federal agencies including



the Veterans Administration, Social Security Administration and the Department of Defense for patient treatment.

We are bringing the knowledge, expertise and systems capabilities developed working on treatment use cases to life, disability, long-term care and workers compensation insurance for use in their underwriting and claims adjudication processes.

If you would like to discuss electronic health data and its uses in more detail, please feel free to contact us: www.clareto.com