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# WHY ARE ELECTRONIC HEALTH RECORD DATA STANDARDS AN IMPERATIVE?

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**Executive Summary** *Data standards are created to improve the efficiency, effectiveness and flexibility of the users of the data. With data standards, constrained technology and analytic staff can focus less time manipulating and transforming data and more time doing high value work. In 2021, a working group led by the Association for Cooperative Operations Research and Development (ACORD) began defining the data standards for Electronic Health Records. This work was based on the underlying health care data standards but focused on only the underwriting risk factors within the data. In the test file cited below, the file size was reduced by 93% without losing the granularity needed to make a sound underwriting decision. The next step will be to evolve these data standards to include the key risk factors to make an underwriting decision for the most frequently encountered chronic medical conditions.*

For the last few decades, the life insurance industry has attempted to move toward data standards to ensure consistency and accuracy in data capture. Many of these data standards are maintained by the Association for Cooperative Operations Research and Development (ACORD). With any new deployment, ACORD transactions provide the structure and format for new systems to communicate to the other systems involved in the process. This article will highlight the value and criticality of data standards and introduce the latest ACORD data standard, which supports the input and use of electronic health records (EHRs) for life underwriting.

Data is ubiquitous and increasingly important. The highest-performing businesses are data-driven; knowing how to harness and use data drives success and efficiency of business processes and, ultimately, creates a competitive advantage. Data is variable, but as a central tenet, it comes in two different types: structured and unstructured.

Structured data is dynamic, neat, organized and fits into predefined concepts. Think of structured data as a warehouse, with columns and rows sorted and stacked with various items. Items are appropriately labeled and tagged for ease of identification and use.

By contrast, unstructured data is not organized. It comes in a wide variety of formats and is difficult to sort through and process. Think of unstructured data as a lake; it is full of data beneath the surface in its raw format, but finding key data elements and even knowing what data elements are present becomes a challenge.

All insurance transactions rely upon timely and accurate exchange of data across multiple stakeholders, from vendors to producers, to the home office, and out to reinsurers. The goal of data transaction is to optimize operation and experience for the data users.

Here is where standards enter. At first glance, data standards may seem abstract, but they serve the same overarching purpose of all standards, including those created for everyday household objects, such as appliances. For example, electrical standards and certification allow an appliance power cord, regardless of who manufactured it, to be plugged into a compatible outlet.

A textbook example of how adoption of a standard by an industry can make or break a product is the 1970s struggle between videotape formats: Betamax vs. VHS.[1] In 1975, Sony released the Betamax format and commanded 100% of the videotape market. Then, JVC created VHS.

The Sony Betamax produced a better picture quality and sound, and consequently commanded a very high licensing fee and retained a proprietary hold on its use. VHS had lower resolution but a longer recording time. Its open standard entered the market and required a significantly lower licensing fee, resulting in wider adoption by other manufacturers.

By 1980, VHS claimed 60% of the US market, touting cheaper prices, longer playing time, and more titles in the videocassette market. Within a year, Betamax's market share was reduced to only 25% and was on the decline. The industry adopted the cheaper open standard, and in less than a decade, the proprietary format was rendered obsolete.

Similarly, data standards establish rules for data elements, definitions, formatting and information descriptions. These rules allow industry stakeholders to exchange and use data for their needs irrespective of how it was created or collected.

One can view the value of standards through three lenses: efficiency, effectiveness and flexibility. Data standards, like the approach JVC took with VHS, allow lower costs and improved efficiency with the ability to respond to changing customer needs and expectations.

### Efficiency

Most insurance stakeholders are being asked to make more decisions at faster speeds and with lower cost. Standards can help organizations increase efficiency in their processes, organization and technology through:

- *Process*: Data standards streamline operations, help reduce the number of manual resources needed for transactions, and better equip organizations to achieve straight-through processing (STP). A common understanding of data allows the organization to collect data once and reuse it in different business areas and entities through the value stream. This drives full automation and creates a data value chain where information from the first interaction can be transferred and shared through to the end of the transaction without manual input or intervention.
- *Organization*: If adopted enterprise-wide, data standards can give an organization operational consistency, allowing teams to work and collaborate more efficiently. Through standardization, teams spend less time working beneath their license on the foundational aspects of data collection and increase their capacity to absorb other demands. Valuable programmers can spend less time writing the code to transform data and more time writing code to directly support business needs.
- *Technology*: Data standards give organizations the benefit of faster implementation and cost-effective integration. By adopting standards, organizations can leverage off-the-shelf, third-party solutions and avoid creating internal proprietary solutions, which are costly to maintain and quickly become obsolete. As data standards become more pervasive in the industry, vendors will be incentivized to build to those standards. These vendors will be encouraged to compete on delivering value and improving features.

### Effectiveness

Effectiveness only occurs when an organization meets its objectives. Standards help organizations reach their existing goals, while carefully and thoughtfully establishing a future vision that increases their effectiveness.

- *Process*: Data standards give organizations the tools to improve data accuracy and consistency, empowering them to use advanced analytics, further rendering processes more effective and efficient. For example, the implementation of new underwriting predictive models and portfolio analytics can advance an organization's processing capabilities and overall effectiveness.
- *Organization*: Adopting data standards gives organizations the capacity to put their high performers on the biggest opportunities and not the biggest problems. Organizations are more effective when their people focus on higher-value tasks such as customer acquisition, retention and management, rather than data entry and data transformation. Using standards to help alleviate problems gives organizations the freedom to shift their focus to more strategic initiatives.
- *Technology*: Data standards allow organizations to increase adoption and deployment of new solutions. With constant advances in technology, insurance organizations need to keep pace. Standards give organizations the tools to quickly implement new technologies into their respective networks and business operations.

### Flexibility

The current global business environment is fraught with uncertainty. Companies with strong and nimble infrastructure can react more effectively to the unexpected. Standards give organizations the foundation to successfully adapt to constant and unpredictable changes.

- *Process*: Data standards shorten the time between identifying changes in the environment and adapting new processes, facilitating a mindset shift from the reactive to the proactive. Data standards also enable companies to easily benchmark themselves against competitors and collaborators, allowing them to find and implement best-in-class practices to achieve competitive advantage.
- *Organization*: Data standards create a common language for organizations to communicate with partners. When there is a common understanding, organizations can share new information and access new data sources, increasing flexibility and better positioning the organization to thrive in the evolving business landscape. This is truer now than ever before in the life insurance industry with the increasing volume of new data sources available and new vendors providing them.
- *Technology*: Standards help organizations avoid getting mired in arguments with partners charging too much or failing to meet business needs. When an organization creates custom or proprietary solutions, it is difficult to pivot or change direction because economics prevent deviation from the status quo given the many proprietary connections that have evolved. With standards, an organization can migrate its data to new solutions and change partners seamlessly as their business needs and objectives evolve.

With adoption of data standards for life underwriting evidence, implementation of new processes and tools will cost less programing time and money, freeing constrained technology resources to focus on growth-driven projects. Businesses will also be able to gather, process and share information more quickly, accurately and inexpensively. This will increase the amount of business current processes can handle and shorten the time to policy issue and process customer requests.

Industry vendors (e.g., data providers and system providers) that adopt standards are also primed to realize significantly shorter implementation cost and time, opening larger market shares to the emerging systems, tools and data sources.

### Electronic Health Record Data Standards

In mid-2020 during the depths of the pandemic, attending physician statements (APS) and paramedical exams were difficult to obtain, forcing carriers to quickly pivot to electronic health records (EHRs) to keep new business underwriting flowing. At that time, it was recognized that this emerging data asset would be adopted. It was also identified that the legacy health care data structure contained significant information not needed in underwriting. ACORD agreed to help create data standards for EHRs.

ACORD initiated the formation of a team with members from carriers, data providers and optimizers, technology vendors and reinsurers. This team agreed that existing health care data standards, ontologies and formats (C-CDA XML, HL7 and FHIR) could be leveraged, with the removal of fields and elements that did not pertain to mortality risk factors. Despite being a lengthy and tedious process, it provided a great foundation for life and long-term care (LTC) underwriting.

The results of this work have exceeded expectations. In the sample case below, the group analyzed the Health Information Exchange (HIE) information on a 72-year-old diabetic. The original data file consisted of 24,790 rows of XML code. After applying the ACORD Electronic Health Record Data Standards and eliminating the unnecessary fields, the resultant file consisted of only 1,829 rows of JSON code without material loss to necessary granularity. This represents a file size reduction of 93%!

Figure 1 (next page) shows the HL7 problem list made up of 1,093 rows of code and the ACORD standard JSON's reduction to 155 rows, while retaining problem dates and their corresponding ICD9 and ICD10 codes. This structured and streamlined data is purpose-built for enabling automated processing.

Figure 2 (next page) shows an excerpt from the prescription medication records of this applicant. In this example, the record for the metformin prescription was reduced from 49 rows to just the relevant information in four rows. The overall medication section in the source file was 4,448 rows, which was reduced to 310 rows using the ACORD standard.

The other sections of the medical record comprise metabolic panels/laboratory tests, physical measurements, social history, plan of treatment, encounters and more. In this example, the data source was the Health Information Exchange file, so it did not contain the clinic note narratives for each visit, but rather, a listing of each encounter.

**Figure 1. Application Results of the ACORD Electronic Health Record Data Standards**

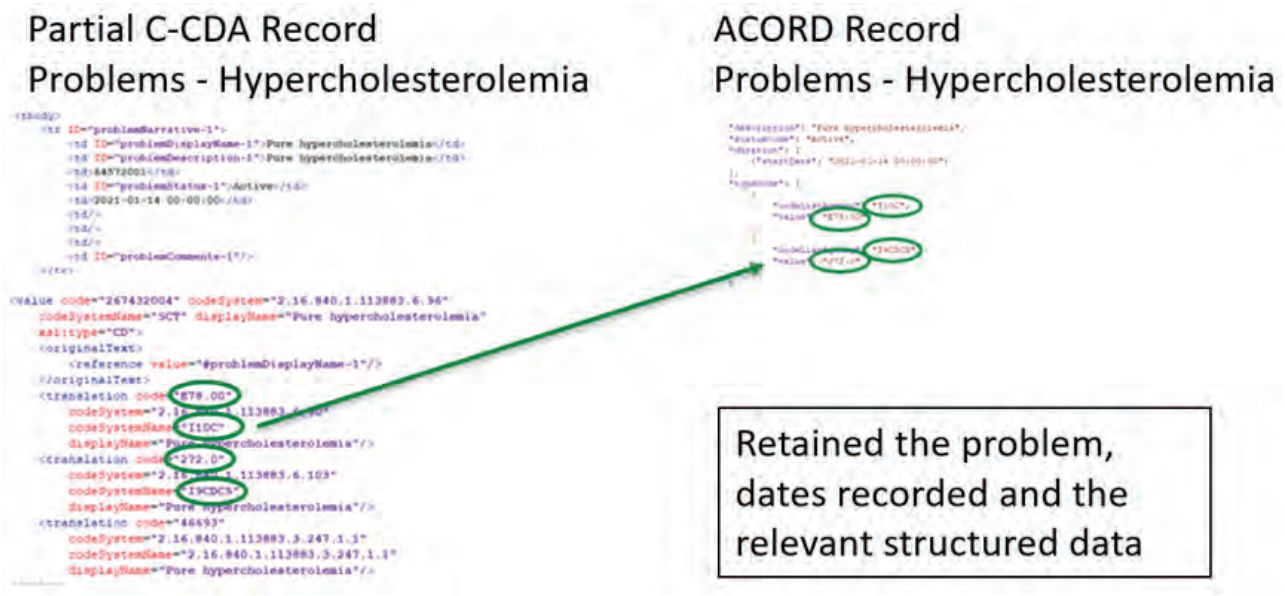
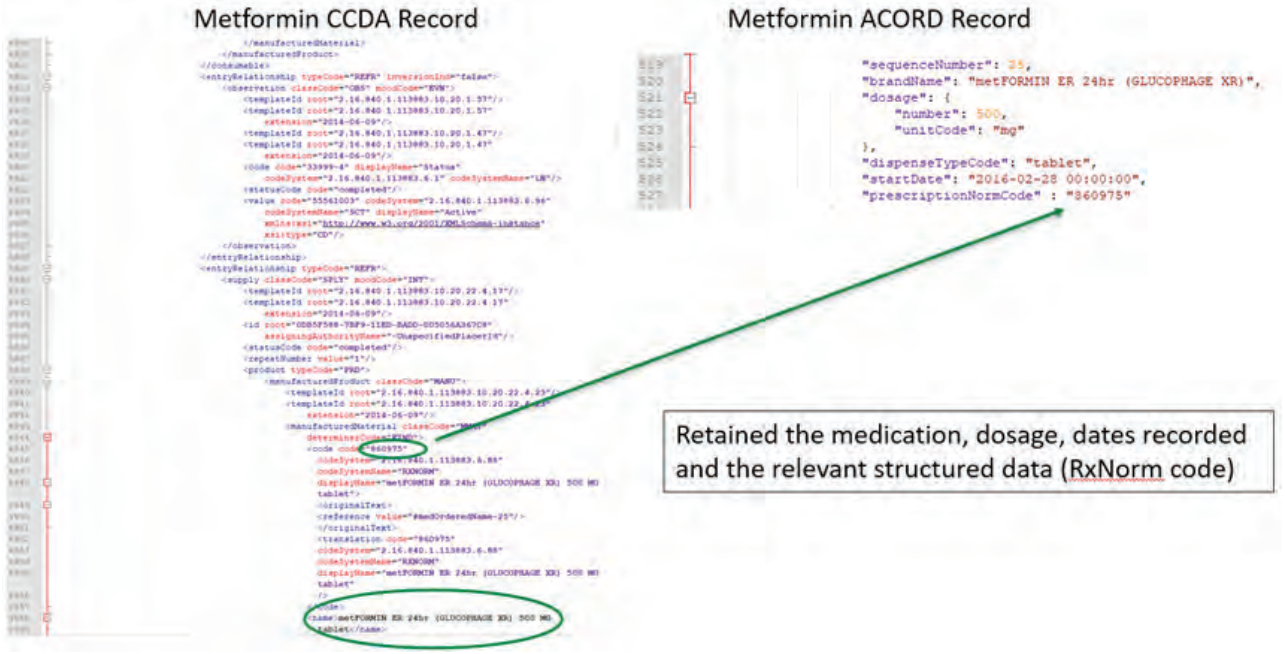



**Figure 2.**




If the record had contained the clinic note narratives, they would have been included as unstructured text capable of being parsed and interpreted with the industry's quickly maturing AI capabilities. With the ACORD standards, most of a medical underwriting file (e.g., prescription information/reports, medical claims, electronic medical records, clinical laboratory results and insurance laboratory results) is amenable to being transacted in these data standards, yielding the efficiency and effectiveness improvements discussed earlier in the article, and enabling true data interoperability throughout the life insurance data value chain.

As data standards mature, and as data sources and their interpretation improve, the ACORD standards will need to evolve beyond health industry standards to include risk factors unique to life insurance underwriting. Data standards were developed with the expectation of evolution and can be easily expanded by adding extensions to the existing sections or by creating a separate Mortality Risk Factors section. In fact, this work is underway.

## Summary

A major leap in efficiency is possible now that the industry is armed with the ACORD Electronic Health

Records Data Standards. This leap is akin to the 1990s transformation from paper to digital image, enabling the industry to move from image to data, which will greatly improve efficiency and enable more automated tools to drive more consistent and accurate risk selection. More recently, life insurers have benefited from a significant number of new data sources. Data standards have always been ACORD's core offering. The foundation now exists to facilitate the processing of clinical data from electronic health records. Companies that adopt, embrace and iterate the implementation of data standards will drive increased efficiency, effectiveness and flexibility. With this basic understanding of how the ACORD Electronic Health Records Data Standards were created and how they work, the authors urge experimentation and feedback. If you would like to learn more about the data standards or get involved with the group that will be revising them, please contact one of the authors for assistance.

### Tools Available to ACORD Members

ACORD has the tools to convert the source files quickly and efficiently to the ACORD Electronic Health Record Data Standards. All ACORD members are encouraged to download these tools and sample files (www.acord.org) and begin testing them. As they are used, the authors fully expect suggested improvements; ACORD is a collaborative and directional organization with a commitment to updating and publishing future iterations of these revised standards as necessary.

ACORD is a non-profit, industry-owned organization that establishes global standards to facilitate fast, accurate data exchange and efficient workflows through the development of electronic standards, standardized forms and tools to support their use. ACORD members worldwide include hundreds of insurance and reinsurance companies, agents and brokers, software providers, financial services organizations and industry associations. If your organization is interested in joining ACORD, please visit its website at ACORD.org.

### Note

1. https://en.wikipedia.org/wiki/Videotape_format_war.


### About the Authors

**Nicholas France** is the Data/Integration Architect at ACORD. He has over 25 years of experience working with IT in the insurance industry involving analysis, architecture, development and implementation. For more than 10 years, Nicholas has worked at ACORD, responsible for the maintenance and creation of XML standards as well as the development of the Framework Architecture. Nicholas is also a published author and is currently working on the ACORD Next-Generation Digital Standards (NGDS), which aim to evolve the ACORD standards to handle new technology and formats.

**Andy Kramer, FLMI, ACS,** has over 30 years of experience in many facets of the industry, from full underwriting at a primary carrier, direct to consumer simplified underwriting and reinsurance underwriting. Throughout his career he has focused on process improvement activity, which includes obtaining his Six Sigma Master Black Belt certification at GE and overseeing two major underwriting system implementations. Andy has an MBA from the University of Missouri-Kansas City and a BS from Saint John's University (MN).

**Paulo Pinho, MD, DBIM,** is currently the Vice President & Medical Director of Innovation for Diameter Health (now Availity Clinical Solutions). He provides clinical expertise and thought leadership on existing and emerging regulations, quality measures, health care data standards and technologies relevant to Availity's offerings. Prior to his current role, he was the Chief Medical Officer at Optimum Life Reinsurance and the Lead Medical Director for Prudential International Insurance responsible for global innovation in Asian and Latin American markets. Paulo has practiced medicine for close to 20 years. He is dual board-certified in Internal Medicine and Pediatrics, and is a Diplomate of the Board of Insurance Medicine. He remains clinically active and is an active volunteer leader with the Arthritis Foundation and with MyLifeSpeaks, an organization that provides care at a village-based clinic near Leogane, Haiti. He enjoys running and has completed a half-marathon in all 50 states.