FAIR Health®
Know Your Source

Response to RFI—Vermont Health Care Uniform Reporting and Evaluation System

September 25, 2017

Ms. Erin Collier
State of Vermont
Green Mountain Care Board
89 Main Street
Montpelier, VT 05620

Dear Ms. Collier:

FAIR Health appreciates the opportunity to respond to the Request for Information (RFI) issued by the State of Vermont, Green Mountain Care Board (State). In its response, FAIR Health will outline its recommended solutions for the specified enhancements to the Vermont Health Care Uniform Reporting and Evaluation System (VHCURES) All-Payer Claims Database (APCD). The description of FAIR Health's relevant experience, processes and practices will underscore its recommendations regarding an APCD model that will meet the requirements the State has delineated in its RFI.

Sincerely,

9/25/17

Bart Bronfman, Chief Operating Officer
FAIR Health, Inc.
212-257-2390
Fax: 917-210-3336
bbronfman@fairhealth.org

Date

Contents

Vendor Information

FAIR Health hopes to be of service to Vermont in its search for possible solutions to enhance or replace VHCURES. FAIR Health is in a position to render such service because it has established and sustains a Multi-Payer Claims Database (MPCD) with the nation's largest private claims data repository. That MPCD already does much of what an effective APCD, functioning at maximum capacity, should be equipped to do, including:

- Seamlessly accept, aggregate, validate and manage vast amounts of claims data from multiple sources in disparate file formats;
- Offer scalable systems and processes that can accept ever-increasing data loads from a growing number of contributors;
- Present those data in formats accessible and useful to a broad range of users, including policy makers and officials, health services researchers, economists, health plans, health systems and practitioners;
- Feature a consumer engagement and cost transparency platform that meaningfully elevates health insurance literacy and promotes sound decision making by patients;
- Support innovative applications that will increase the APCD's utility and value to its host state, including the use of "episodes of care" cost bundling to support value-based reimbursement and Accountable Care Organization (ACO) models;
- Apply automated processes and protocols based on methodologies vetted by experts to ensure that the data it maintains are accurate and reliable;
- Uphold to the highest standards the security and privacy of personal information of patients, practitioners and payers;
- Ensure the highest level of neutrality and independence so that the APCD functions not just as a mechanism for collecting and organizing data but as a universally accepted resource informing decisions and shaping policy that will impact the healthcare of the host state's residents; and
- Transform the value of the data collected into a funding stream that helps fortify the sustainability of the data collection and warehousing enterprise.

FAIR Health's unique history, structure, resources and experience, as described below, have prepared it to assist Vermont in performing those functions.

History and Structure

FAIR Health is a national, independent, nonprofit organization, incorporated under New York law and qualifying as a public charity under section 501(c)(3) of the tax code. It was established in 2009 as part of the settlement of a broad investigation by New York State into certain health insurance industry practices associated with claims reimbursement. FAIR Health was formed as an independent organization to create a national MPCD and to bring transparency, integrity, reliability and accessibility to healthcare costs and insurance information. Today, FAIR Health is regarded as a fair and neutral provider of robust data and data tools by its diverse clients throughout the healthcare sector. FAIR Health produces a variety of data resources, including standard cost benchmarks to reflect pricing, geographic variation and trending associated with specific healthcare services; benchmarks and custom analytics for episodes of care; and

research datasets and visualization dashboards and tools to reveal epidemiological trends, the efficacy of public health interventions and treatment protocols, among other uses.

FAIR Health's independence starts with its corporate structure. FAIR Health is governed by an uncompensated Board of Directors representing leaders in all segments of the healthcare industry, including providers, insurers, consumers, researchers, educators and policy makers. FAIR Health's integrity and independence are also evidenced by its outreach to expert advisors to help in shaping its statistical methodologies, technology infrastructure, policies and procedures and, ultimately, by the trust its clients place in the quality of its data products.

FAIR Health performs all of its operations in house with talented and experienced staff who offer expertise in a variety of disciplines, from information technology to statistics to public health to consumer health literacy.

Vast Claims Data Resources

FAIR Health's database currently contains more than 24 billion claim records for medical and dental services from 2002 to the present and is growing by more than 2 billion new claims per year. FAIR Health data are submitted by over 60 payers and administrators in all 50 states and Washington, DC, who insure or process claims for private insurance plans covering more than 150 million individuals nationwide.

Certified by the Centers for Medicare & Medicaid Services (CMS) as a Qualified Entity (QE), FAIR Health also receives Medicare Parts A, B and D claims for all 55 million Medicare beneficiaries for the 50 states and Washington, DC—approximately 20 billion claims from 2013 to the present. As a QE, FAIR Health is required to produce public reports that shed light on the Medicare data in order to advance policy making and best practices in the healthcare system. As a QE, FAIR Health also is permitted to produce insightful comparative analytic reports that juxtapose Medicare and commercial claims to certain authorized users; state agencies and officials are among those "authorized users."

Breadth of Experience

FAIR Health's origins have made it a natural ally for states and government agencies seeking reliable, independent data to support public health and policy making, healthcare research, legislative initiatives, insurance regulation, dispute resolution and consumer education. Indeed, FAIR Health data have been incorporated as the official benchmark into state statutes, regulations and official memoranda for a variety of health-related programs (e.g., workers' compensation, auto liability, emergency services and consumer protection laws pertaining to surprise balance bills).

FAIR Health's customers also include health plans, insurers, third-party administrators, employers, unions, provider networks, healthcare professionals, academics and researchers. They use FAIR Health data to inform the creation of fee schedules; assist in claims adjudication, premium setting, network design and provider dispute resolution; perform market studies; evaluate the effects of healthcare policies; and much more.

In summary, FAIR Health combines the integrity and mission-driven focus of an independent, nonprofit organization with the vision, innovation, attention to service and technological expertise of a cutting-edge health data management organization.

Cost Estimates

Based on FAIR Health's experience supporting claims data initiatives for state and federal agencies, FAIR Health's estimated annual price to the State of Vermont in support of the widest possible range of requirements associated with replacing or substantially enhancing VHCURES is $[redacted].

Proposed pricing for individual projects will vary depending upon the specific requirements outlined in future Requests for Proposals (RFPs).

Business and Technical Requirements

5.1 Data collection, cleansing, consolidation, and distribution

FAIR Health can meet Vermont's needs for claims data processing, de-identification and reporting. FAIR Health has significant experience collecting data in varied formats from different proprietary systems and validating and reassembling the data in a uniform, standardized dataset that can be mined, searched, analyzed and reorganized to facilitate both internal comparisons and comparisons with external datasets. FAIR Health uses this data resource to conduct its own statistical research and has assisted many academic researchers, government agencies and others with specially designed datasets and analytics created to their specifications.

Maintaining the highest data quality standards is integral to FAIR Health's leadership in promoting healthcare cost transparency. FAIR Health's mathematicians, statisticians and clinical experts apply their extensive healthcare systems and claims experience to developing statistical quality review and analytic processes that ensure the validity and integrity of its data.

FAIR Health performs rigorous validation processes and quality assurance tests at each stage of its data management process to support claims data collection, validation, mapping and aggregation. Claims data are subjected to intense scrutiny, including the standardization of data from multiple sources, identification of erroneous data elements, comparison to actuarial expectations and industry norms and detection of duplication and claim versioning.

FAIR Health rigorously protects the privacy of healthcare data in compliance with the provisions of the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule for electronic protected health information (ePHI) and the NIST SP 800-122 standards for personally identifiable information (PII). FAIR Health's certified privacy and security compliance and governance includes:

- Management by an executive committee tasked with maintaining FAIR Health's exacting approach to privacy, security and risk management;
- A strong foundation of internal policies and procedures addressing operational security, data privacy and incident reporting;
- Stringent multiple-authorization control over the movement of ePHI/PII in FAIR Health's systems;
- Monitoring and evaluation of changes to federal and state privacy laws concerning ePHI/PII;

- Securing of Business Associate Agreements (BAAs) governing the use and protection of PHI pursuant to HIPAA; and
- HIPAA-compliant de-identification in accordance with statistical expert determination, including anonymization, removal and redaction to reduce risk.

FAIR Health's risk management program continually evaluates and manages risks to the confidentiality, integrity and availability of FAIR Health's ePHI/PII data. FAIR Health's privacy and security recognitions include:

- CMS has certified FAIR Health as a QE—a testament to FAIR Health's demonstrated ability to securely house and protect healthcare information in compliance with recognized standards and protocols;
- FAIR Health earned HITRUST CSF Certified Status by meeting key healthcare regulations and requirements for protecting and securing sensitive private healthcare information; and
- In recognition of its data security policies and practices, FAIR Health also received Service Organization Controls (SOC 2) certification, demonstrating compliance with the guidelines of the American Institute of Certified Public Accountants (AICPA).

Vermont can take advantage of FAIR Health's experience and investment, and avoid having to engage in expensive development of its own.

5.2 Master Person Index

There are a number of approaches that can be used to construct a Master Person Index within a dataset. Two commonly used approaches entail:

1. Requesting the Master Person Index from each payer:
    a. FAIR Health can request the current Master Person Index from each individual payer, along with all the relevant data associated with that particular patient, including eligibility criteria, which can then be cross-referenced to create a contiguous Master Person Index across each individual payer into a single Master Person Index for use in this project.
2. Creating the Master Person Index from data FAIR Health receives:
    a. Using a linking algorithm that, based on factors such as utilization of medical services and history of conditions and treatments, can identify a patient across payers, various data elements that are received in the claims data can be included in the calculation to identify single patients across multiple datasets.
    b. Typically, a "first run" calculation that identifies those patients who "fall off" a plan, or who no longer seem to be receiving care, will be run.
    c. In conjunction with (b), using an algorithm similar to the one mentioned in (a), as well as a patient's name (and various combinations thereof), address (again, using various combinations thereof), providers, medical usage index and other identifying factors (e.g., conditions, age, birth date), FAIR Health will create a model that can identify individuals across plans.
    d. Once FAIR Health knows Patient A in Plan B is also Patient B in Plan C, both Patient A and Patient B will be assigned the same unique FAIR Health member ID number.

5.3 Master Provider Index

FAIR Health utilizes National Provider Identifiers (NPIs) to link providers across payers. When the NPI is not available, FAIR Health uses provider Federal Tax Identification Numbers (FTINs), which are encrypted within its systems, to ensure consistency across providers. In some cases, due to a payer's limitations, FAIR Health may need to obtain from the payer a provider directory file, which includes a payer-specific identifier that the payer uses to identify the provider in its system. Once FAIR Health has the full provider directory from the payer, an algorithm can be created that maps names, locations and other pertinent information to identify a particular provider. At that point, FAIR Health will assign that payer-specific provider identifier to the NPI that belongs to the provider, and subsequently map the NPI to the provider each time.

5.4 Data warehouse, analytic enclave

5.4.1 Secure Container

FAIR Health takes its information security obligations seriously. FAIR Health's data vault architecture isolates ePHI to the most secure levels of FAIR Health's infrastructure. Using ingress-only security zoning, redundant multi-tier firewalls and intrusion prevention devices with extensive alerting mechanisms, FAIR Health isolates ePHI from external (Internet) access and prevents exfiltration.

FAIR Health employs extensive administrative, procedural, technical and physical safeguards built to comply with industry standards, regulations and best practices, including HIPAA/HITECH, NIST SP 800-53, CMS ARS/MARS-E v2 and ISO/IEC. Data are secured end to end, at rest and in transit using FIPS 140-2 encryption algorithms.

FAIR Health's SOC 2-compliant data centers feature state-of-the-art physical access controls, including 24-hour security guards, biometric access and video surveillance.

FAIR Health can help Vermont evaluate its security structures and assist in implementing any improvements deemed appropriate.

5.4.2 Controlled Access

FAIR Health uses Oracle technology to ensure the protection and security of all data within its infrastructure:

- **Oracle Audit Vault and Database Firewall:** Oracle Audit Vault and Database Firewall secures databases and other critical components of IT infrastructure (such as operating systems) in two ways: For Oracle databases, Oracle Audit Vault and Database Firewall lets an auditor set audit policies and provision them from the Audit Vault Server console. In addition, it provides a database firewall that can monitor and/or block SQL statements on the network based on a firewall policy designed by an auditor.
- **Oracle Database Vault:** Oracle Database Vault provides powerful security controls to help protect application data from unauthorized access, and comply with privacy and regulatory requirements.

With Oracle Audit Vault and Database Firewall and Oracle Database Vault, one problem is false alerts. To address this, FAIR Health has developed custom auditing reports that enable it to distinguish quickly between normal and abnormal activity.

As part of this overall solution, FAIR Health can deploy controls to block privileged account access to application data and control sensitive operations inside the database using multi-factor authorization. Through the analysis of privileges and roles, FAIR Health can increase the security of existing applications.

FAIR Health also has a rigorous and mature process for evaluation and quality assurance of all reports and data. FAIR Health uses multiple techniques to ensure cell size aggregation and enacts those techniques in all benchmark data products.

FAIR Health can share its approaches for maximizing utility and minimizing complexity and assist in working with this type of technology.

5.4.3 Improved Processing Capabilities

FAIR Health possesses exceptional human and technical resources that enable it to perform complex data management operations, including the collection, validation, organization and analysis of vast amounts of data from diverse sources. FAIR Health employs Oracle Exadata Engineered System technology to take in, process and store billions of healthcare claims records from multiple, disparate sources. This technology utilizes ultra-high performance, scale-out compute and storage services, along with InfiniBand communication and specialized software engineered to process big-data datasets, such as healthcare/medical claims data.

In addition to housing FAIR Health's growing data resources, this technical infrastructure has been designed with an emphasis on security, performance and flexibility: security to limit access to PHI and sensitive data and mitigate data-security risks; performance and scalability to accommodate increasing volumes of data resources, enabling FAIR Health to take in, hold and work with additional datasets from other data owners; and flexibility to be able to quickly respond to ever-changing and increasing demands and uses for FAIR Health's data.

FAIR Health's database structure has several components that ensure that data including PHI are maintained in the most secure and least accessible region. FAIR Health's PHI Zone is a separate and distinct database within its Exadata system that resides in an encrypted state at all times. FAIR Health also has a Quality Control (QC) area where data reside as they pass through to the warehouse. The warehouse serves as a buffer database between the PHI Zone and the more accessible data warehouse and prevents the database from directly accessing the PHI Zone.

The following performance metrics describe the processing capabilities supported by the FAIR Health data warehousing infrastructure:

Data Load Time

Data loading requires many steps, including, but not limited to, validation, encryption, decryption, de-identification, claim versioning logic, cross-walking to standard values and various dimensional loads. The numbers presented below include all data processing steps.

Overall Record Ingestion

- Contributor file from file system to PHI Zone database—2 million records per minute; and

- From PHI Zone through the QC/buffer database and into the data warehouse (including validation, de-identification, cross-walking, etc.)—40,000 records per minute.

FAIR Health Schema and Table Populations for a 3.5 Million Claim Contribution

- Contribution file to PHI Zone—96 seconds;
- Validation/de-identification/cross-walking—42 minutes;
- Quality control table load—3 minutes; and
- Data warehouse load (including claim versioning, dimension loads, etc.)—35 minutes.

Currently, FAIR Health has over 24 billion private claims records in its repository from 2002 to the present. FAIR Health also houses approximately 20 billion records from the Medicare dataset, as part of its QE status. FAIR Health's query performance statistics are as follows:

- 43 percent of queries completed in less than 1 second;
- 90 percent of queries completed in less than 1 minute;
- 7 percent completed in 1 to 5 minutes;
- 1 percent completed in 5 to 10 minutes;
- 2.5 percent completed in over 10 minutes (many of these entail scanning all or significant amounts of the claims table and typically involve either creating a table or inserting data into a table, which is more involved than a basic query response);
- Median execution time is 1.5 seconds;
- Average execution time is 1.85 minutes; and
- Maximum execution time was 404 minutes in the instance of a query that necessitated multiple joins and 24 OR statements across 120 diagnosis values.

FAIR Health also has a state-of-the-art dashboard technology that is both portable via an EXE technology and fast and nimble to allow for quick and easy drill downs. This allows users to receive aggregated visualizations that they can then use without linking to a website or into the FAIR Health infrastructure. It also allows FAIR Health to control use, access and cell sizes in order to provide the level of access that is allowable for the individual.

5.4.4 Data Management

FAIR Health has the staffing and resources to meet Vermont's data management needs. FAIR Health personnel are experts in technology, statistics, security, analysis, communications, public health, insurance, clinical diagnoses and care, finance, consumer education and law. The combination of human talent and sophisticated technology enable FAIR Health to perform data management and conduct data studies with exceptional efficiency, speed and reliability.

FAIR Health has a strong background in working with multiple entities to provide diverse, customized datasets. Researchers use FAIR Health's data in multiple ways and typically request a limited dataset or a de-identified dataset in order to conduct their analytics. Many other entities, among them payers, provider organizations, medical societies and media representatives, work with FAIR Health to obtain aggregated data, individual reports and ad-hoc analyses as well as interactive dashboards, visualizations and static reports.

FAIR Health has a mature process in place to work with these stakeholders and document their requirements and needs, as well as a flexible approval process that can be augmented to accommodate the State's needs. FAIR Health's work also requires standard and custom Data Use Agreements (DUAs), which the State can then leverage if it prefers.

Similarly, FAIR Health's analytics practice includes multiple steps for requirements validation, quality assurance and final evaluations. Again, the State can leverage this process, which is already a part of day-to-day business at FAIR Health.

5.5 Public use data and/or analytic files

FAIR Health has designed and employs tools for specialized, complex data mining and reports to address a wide range of topics, from opioid trends to air ambulances to concussions, oncology, food allergies and diabetes. It provides data resources for policy makers and experts at major academic institutions, as well as FH® Student Starter Kits to develop future researchers' capabilities.

6 Other Considerations

6.1 VHCURES Rule Changes

As shown in its work with states in the past, FAIR Health has the flexibility to work with all changes in the VHCURES Rule, and to offer assistance on educational, statistical and technical matters in the rule-making process if that is desired.

6.2 Lock-Box for Master Person/Provider Indexes

FAIR Health's evaluation of lock-box technologies to date has found there to be greater risk of identification than rewards in terms of integration across platforms. For that reason, FAIR Health has not implemented such solutions in the past but is open to exploring their use in the future as they may serve the needs of a given project.

6.3 Proprietary/Licensed versus Open-Source Software and Products

While FAIR Health's technology stack does not include significant open-source software components, the licensed solutions FAIR Health does deploy are well-established, well-supported, cost-effective solutions, including SAP Data services, SAS, Tableau and DevExpress.

6.4 Collaborative Implementations

Collaboration among states on APCDs, or on a single multistate APCD, has many potential benefits, including economies of scale, improved research potential, availability of cross-state comparative analytics and advancement of sustainability. FAIR Health has substantial experience working with state governments around the country, both in supporting ongoing studies and operations and with research for policy initiatives, and could facilitate such collaboration. As an independent, conflict-free organization well-versed in maintaining its own MPCD, FAIR Health could participate in any such collaborative venture by performing specific tasks or by operating a multistate APCD as a third party.

Whether Vermont decides to collaborate with other states, it might consider engaging FAIR Health to perform specific tasks or to provide assistance with the enhancement of the State's own structures, operations and public health initiatives.