Virginia Department of
Behavioral Health &
Developmental Services

Data Quality Monitoring Plan
Source System Annual Update

June 2021

Data Quality Monitoring Plan

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Executive Summary

This annual report is a component of the DBHDS Developmental Disability Quality Management Plan and highlights improvements to the twelve source systems that the Office of Data Quality and Visualization (DQV) assessed in Phase 1 of the [Data Quality Monitoring Plan (DQMP)](.).[1] Information was gathered using the methodology presented in the Annual Update Process; this includes interviews, document review, and attendance at relevant training. The methodology was developed to be as comprehensive as is feasible for an annual update.

The table below provides a list of the source systems reviewed for this annual update, the categories in which improvements were made, and whether these systems are in the process of being replaced.

Source System	Categories of improvement	Replacement pending
Avatar	Data Validation	No
Children in Nursing Facilities Spreadsheet	None	Yes
CHRIS-OHR/SIR	Key Documentation, Data Validation, User Interface, Business Ownership	Yes
Employment Spreadsheet	Key Documentation, Data Validation, Business Ownership	No
IFSP – Individual and Family Suport Program	None	Yes
eMRF – Electronic Mortality Review Form	Key Documentation, Data Validation, User Interface, Business Ownership, Maturity	Yes
OLIS – Office of Licensing Information System	Key Documentation, Business Ownership	Yes
PAIRS - Protection and Advocacy Incident Reporting System	None	No
REACH - Regional Educational Assessment Crisis Habilitation	Key Documentation, Data Validation	Yes
RST - Regional Support Team	Key Documentation, Data Validation, Business Ownership	Yes
WaMS - Waiver Management System	Key Documentation, User Interface	No

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[1] DataQualityMonitoring2019_2020.PDF, pages 1-71

Data Quality Improvements

Findings from the initial Data Quality Monitoring Plan fell under the following headings: Key Documentation, Data Validation Controls, User Interface, Business Ownership, and Maturity. DQV organized this annual update by those headings to highlight the improvements made to each system; no improvements were identified outside of these categories. If a system is not mentioned within a category, no changes to the system were identified. While the original recommendations presented by the first Data Quality Monitoring Plan report have not been addressed, some steps have been taken to improve data quality to a variable extent. Please see the first Data Quality Monitoring Plan report for a complete list of recommendations for each source system.

Key Documentation

There has been significant effort by business areas to produce and update key documentation. In August, 2020, The Office of Human Rights (OHR) updated training documentation related to CHRIS, Quick Reference Guides, and the CHRIS-HR User Navigation Guide. Similarly, the Office of Licensing (OL) updated system training documents for CHRIS-SIR, including instructions for how to get approved users in Delta and the CHRIS-SIR navigation guide. OL also updated and produced a variety of internal training materials for OLIS to improve the reliability of data entered into the system, including internal standard operating procedures and how-to guides.

For the RST spreadsheet, the Office of Provider Development produced the "Internal Process Guide", which documents the complete life-cycle of RST data. The WaMS team produced standard operating procedures for processes performed by their statistician, as well as guidance documents for new modules. The Business Owner of the Employment Spreadsheet created and documented a process for the system that outlines the data collection and reporting process, and updated the Instructions sheet to include business definitions, data entry procedures, and guidance for data interpretation.

The Electronic Mortality Review Form (eMRF) implemented a change log that documents every change to form since its creation in September 2019. Further, the eMRF developer created user interaction diagrams and developer documentation that stores all new code implemented in the source system. Within REACH, data definitions have been refined through continuous review to help users more accurately capture data in the system.

Data Validation Controls

Business Owners have built some additional data validation controls into their source systems. CHRIS-SIR implemented the use of required fields and added format controls for all date fields within the system; while CHRIS–HR added time stamps for date fields to accurately capture the

date and time allegations are reported. The RST spreadsheet added data validation controls to their workbook, including dropdown menus and a data migration process to automatically populate data tables. REACH saw the addition of mandatory fields, check-boxes, and new classifications to dropdown menus to improve the accuracy of the data entered into the system. In addition to numerous data validation controls, a system-initiated "completeness check" was added to the eMRF that ensures all data are entered before records can be submitted.

Avatar integrated a Web Services Interface for importing data from the facilities' EMR through HL7 messaging, standardized billing service codes, and installed an update that prevents imported service codes from overwriting existing service codes for historical data validation. Lastly, the Employment Spreadsheet implemented a hierarchical diagnosis classification system that prevents individuals with multiple active diagnoses from being incorrectly categorized in the system.

User Interface

Overall, many source systems within the agency implemented User Interface (UI) modifications aimed at improving data quality across the agency. CHRIS–SIR added and changed some internal reports that are able to be pulled directly through the UI, improving the efficiency of OL operations. OHR updated the DBHDS Advocate Report section within CHRIS-HR to reflect several new actions that an advocate can take during a provider's investigation. One significant change to the CHRIS User Interface that impacts both CHRIS-SIR and CHRIS-HR prevents CHRIS from opening a previously viewed record when the web application is launched, a problem that previously resulted in some data being overwritten by mistake. WaMS received an enhanced search functionality for "My List", a tool that allows users to identify which ISPs are due to be updated, and an update to the user interface that allows the system to accommodate multiple open modules within a reduced-size window without losing access to unsaved modules. These changes to WaMS will help ensure that ISP data are updated within a timely manner, and can help prevent users from being required to re-enter data that could not be accessed in the reduced size windows.

The eMRF received a complete re-build of the front-end user interface; adding display logic, conditional visibility of certain fields, a workflow status flag that helps users identify when records can be edited, an advanced search feature that allows users to identify the correct records, and a report through which users can review all data in the record at any time during the data entry process. These updates may help reduce the frequency of data entry errors by ensuring that the functionality of the user interface both supports accurate data entry and contains validation controls that prevent the insertion of non-conformant data.

Business Ownership

Since the first DQMP review, steps have been taken that reflect an enhanced understanding of Business Ownership. The Business Owner and SME of CHRIS-SIR began issuing monthly updates to users about common data entry errors, data highlights, and system alerts. OL has also revised the CHRIS-SIR training process and has begun uploading training videos to their website. OHR revised the training process for CHRIS-HR, so that providers are now scheduled for training by OHR Advocates, rather than selecting their own training dates. The Business Owner of CHRIS-HR has also taken a more proactive approach by distributing memos about system issues or updates.

For the eMRF, a change control process was developed where stakeholders can propose changes to the system, which are reviewed annually. OL revised their training process for OLIS so that new users are paired with OL Specialists for a detailed walkthrough of the system. Lastly, the Employment Spreadsheet adopted a change control process in which the Employment-first-advisory Committee develops and proposes updates to the source system, which are reviewed by the Business Owner prior to implementation.

Maturity

DBHDS has made some progress in improving the maturity of source systems. Significantly, the eMRF underwent a near-complete re-build to create a more mature system. There has also been effort by the agency to pursue Enterprise-level solutions for data collection and storage issues through the integration of Microsoft Dynamics 365 into the agency workflow. This product can perform a variety of functions related to data collection, storage, and analytics, and may supplant some informal data sheets and less mature source systems. Work has also been done to replace outdated systems. For example, OL is finalizing the development of CONNECT, a new system which is expected to replace OLIS in fall of 2021.

Conclusion

DBHDS business owners and SMEs have taken steps to address data quality issues and future efforts would benefit from a formal process in which IT documents plans to address the issues identified in the DQMP assessments. Further, several business owners are taking steps to procure new source systems to replace several outdated systems, or making improvements to the user interface and data validation rules for some of the existing systems. These activities are in various stages of development and will be captured in subsequent data quality updates. These improvements and plans for improvements by Business Owners are steps in the right direction and additional efforts are needed to sufficiently address data quality as outlined in the original Data Quality Monitoring Plan report.

Next Steps

At the request of the DOJ SA Steering Committee, in order for DBHDS to address and act upon the recommendations outlined in the SFY2020 Data Quality Monitoring Plan, DQV has agreed to conduct another assessment to develop actionable recommendations in SFY 2022. This will include the execution of an entirely new methodology by which DQV will shadow personnel that enter the data, obtain access to the appropriate system environment to test the data, and conduct interviews with numerous personnel to obtain the most holistic perspective of each system. Through this in-depth process, DQV will identify major threats to data validity and reliability within each source system and develop a list of up to twelve actionable recommendations that must be successfully addressed by IT or the Business Owner in order for the Chief Clinical Officer to affirm the validity and reliability of the system. Concurrently, IT must collaborate with the respective business areas to address findings from the initial DQMP source system and data warehouse assessments.