Virginia Department of Behavioral Health & Developmental Services

Data Quality Monitoring Plan
Source System Annual Update

June 2022

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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[2]; this included interviews with Business Owners, review of IT Project Management Office Status Updates, and review of documentation provided by the Data Pinnacle leadership. The methodology was developed to be as comprehensive as is feasible for an annual update while being inclusive of the effort expended by Business Owners to improve each system, and thus does not include the independent verification and validation of each finding.

The table below displays the source systems reviewed for this annual update, the categories in which improvements were made, and the replacement status for each system.

Source System	Categories of improvement	Replacement Status
Avatar	Key Documentation, Data Validation, User Interface, Business Ownership, Maturity	Planned replacement
Children in Nursing Facilities Spreadsheet	User Interface	Planned replacement
CHRIS-OHR/SIR	Data Validation, User Interface, Maturity	Planned replacement
Employment Spreadsheet	Key Documentation, User Interface, Data Validation, Maturity	N/A
IFSP – Individual and Family Support Program	None	Planned integration
eMRF – Electronic Mortality Review Form	None	Planned replacement
*OLIS – Office of Licensing Information System / Transitioned to **CONNECT****	Key Documentation, Data Validation, User Interface, Business Ownership, Maturity	Complete
PAIRS - Protection and Advocacy Incident Reporting System	None	Planned replacement
REACH - Regional Educational Assessment Crisis	Key Documentation, Data Validation, User Interface, Business Ownership, Maturity	In transition to Crisis Data Platform

[1] DataQualityMonitoring2019_2020.PDF, pages 1-71
[2] DQMPAU_Process_v.2.0_12MAY2022

*Habilitation/Transitioning to the **Crisis Data Platform****		
Regional Support Team (RST) Workbook	Key Documentation, Data Validation, Business Ownership	Planned integration
WaMS - Waiver Management System	Key Documentation, Data Validation, Business Ownership, Maturity	N/A

System Replacements:

In fall 2021 the Office of Licensing Information System (OLIS), which stores information about licensed Developmental Disability (DD) providers within the commonwealth, was replaced with CONNECT, a vendor supported application with enhanced security and data collection features when compared to OLIS. Additionally, the Crisis Services team is in the process of transitioning data from the Regional Educational Assessment Crisis Habilitation system (REACH), which stores information about mental and behavioral health crisis calls, to the newly launched Crisis Data Platform, which also provides enhanced functionality, security, and data validation as compared to its predecessor.

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 for that category.

Key Documentation

Over the last year, there has been effort by business areas to produce and update key documentation. The team behind Avatar updated onboarding process documentation for the system and produced a user access termination document. Additionally, the team recently brought on a project manager to document standard operating procedures for data entry processes, develop a taxonomy of common definitions for terminology within the system, and publish data entry requirements for end-users. Lastly, the team provided requirements to the Office of Information Security for the development of a business impact analysis, risk assessment, and system inventory definition for incorporation into a system security manual which will be produced later this year.

The Employment First team also made significant progress in developing key documentation for their revised Consolidated Employment Spreadsheet (CES). The team produced a data dictionary for all data elements contained within the CES, training materials, data entry instructions, and

documented business rules for exceptions to data entry conventions that will be distributed alongside the data collection form. Lastly, the Employment First team developed process documentation that describes the entire Employment First data process; including all steps required to collect employment data, load the data into the CES, and to clean and transform the data for reporting. These documents will help ensure greater reproducibility in the Employment First data process, improving the reliability of the data for this system.

Other teams across the agency took steps to produce key documentation for their Source Systems. After launching the new licensing information system, CONNECT, the Office of Licensing produced training documents and process guides for the system. Similarly, after launching the new Crisis Data Platform, the Crisis Services team produced a user manual that is accessible from within the system and they are continuing to produce documentation including information about updates to the system, training resources, and a data dictionary. Lastly, the Office of Integrated Support Services (OISS) not only made security documentation available for WaMS but also updated and produced process documentation, "Did you know" documents, and user guides for all new or and updated modules over the course of the year.

Data Validation Controls

In FY2022, Business Owners built additional data validation controls into their source systems. The Avatar team modified the underlying data tables of the system that lengthened several data elements in response to the evolving needs of the business area. Further, the team began a project to add a new module to Avatar that will allow for the validation of patient address data through an interface with the USPS address validation tool. Within CHRIS-SIR, an SSIS package was created to import data from daily extract files from CONNECT to tables into the CHRIS database. This effort led the team to disable several data entry fields and the entire Action Report page where these data are displayed in the system. Meanwhile CHRIS–HR restructured the entity field for providers in complaint and abuse reports; transitioning this free-text field to a dropdown menu with selections consistent with options available in CHRIS-SIR.

Within the revised CES, the Employment First team has implemented data validation controls to reduce the probability of data entry errors. These additions include dropdown menu controls, restricted text fields, and controls that ensure that data are entered in a format that aligns with the data requirements for these fields. Additionally, the revised CES makes use of locked fields to ensure that end-users are not able to alter formulas used to automatically calculate values with in the CES.

In transitioning from OLIS to CONNECT, the Office of Licensing ensured that additional data validation constraints were placed on the system, including the addition of dropdown menus,

check boxes, restricted fields, and system logic that will prevent cases from being closed prematurely. Further, CONNECT also has fields that auto-populate based on selections made in other fields, such as the disability population for specific licenses, which now automatically populates based on what license was selected. Lastly, CONNECT interfaces with CHRIS-SIR for the investigation of serious incidents, late reporting citations, and for routine background checks of providers applying for licensure of services.

In transitioning from REACH to the Crisis Data Platform, the Crisis Services team applied many data validation controls to data elements reported upon using the new system, including the introduction of required fields and dropdown menus for categorical data elements. Within WaMS, OISS made several adjustments to the data validation controls applied across several modules. In constructing the new ISP 3.3 module, the functionality of this module included the use of required fields, invalid data format popups, and locked fields based on user-roles. Additionally, race was made a mandatory field within the system. A pre-existing date field within the Service Authorization module was adjusted to allow for Service Authorization staff to amend service dates not correctly entered within the system, reducing the amount of manual effort and communication required to correct these dates and improve the timeliness of service authorizations. Lastly, WaMS integrated connectivity with the Department of Medical Assistance Services (DMAS) Medicaid Enterprise Services, which will ensure secure, timely, and accurate exchange of data between these two platforms.

User Interface

Some source systems within the agency implemented User Interface (UI) modifications aimed at improving data quality. Avatar implemented a system update to resolve issues with the user interface for some forms in which data entry caused the display to rapidly scroll away from the selected field, disorienting users and interrupting the flow of data entry. Within CONNECT, many features were implemented within the UI that aim to improve the accuracy and reliability of data entry; including help menus, tool-tips that provide definitions of key terminology, and the linking of certain fields within the UI to prevent redundant data entry. Additionally, CONNECT's Provider Portal allows providers to review documentation received by the Office of Licensing to ensure the timely provision of documentation required for licensure. The Crisis Data Platform contains many UI upgrades over REACH, including the capability to provide prompts such as tooltips, hover text, and warning messages.

The revised CES underwent many changes to the UI that have the capability to improve data quality. First, the Employment First team added additional worksheets to the Employment First data collection form that provides information about data entry, exceptions to standard data entry requirements, and detailed information about each data element collected within the

form. Within the main data collection worksheet, the revised CES contains conditional formatting on all cells to inform users of potential duplicates in the data, data entry errors, and required data fields. As well as an error counter, pop-up messages now show a user when invalid data have been entered, and tooltips appear for each data field within the spreadsheet. Lastly, the UI has been modified to display the headers of each column regardless of the user's position within the worksheet and allows for the user to sort all data to ensure completeness of data entry.

Business Ownership

Throughout the fiscal year, some steps have been taken that reflect an enhanced understanding of Business Ownership within the agency. For example, the Business Owner of Avatar has brought on a dedicated trainer for all processes related to data entry within that source system and is working to hire a Project Manager that will take stewardship of these processes. The WaMS team continues to take an active role in ensuring all processes are updated in accordance with the requirements set forth by the business area; including the process for Supports Intensity Scale and Level of Care expirations and ensuring that these updates are effectively communicated to stakeholders and end-users. Further, the Business Owner of the Employment First team came to a data sharing agreement with the Department of Aging and Rehabilitative Services, allowing for the creation of a process by which all Employment data will be assessed for uniqueness across records.

The Business Owner of CONNECT has held regular meetings with stakeholders to identify issues and bugs with the new system and has overseen the establishment of a CONNECT help-desk that provides technical assistance to end-users and reports novel issues with the system back to the Business Owner and support team for resolution. Additionally, the Business Owner of CONNECT conducted numerous rollout trainings for end-users to better understand the functionality and use of the system. Similarly, the Business Owner of the Crisis Data Platform oversaw the production of training videos for data entry that have been displayed during training sessions for the system and has approved the production of more videos as additional functionality is implemented within the system.

Maturity

DBHDS has made some progress in improving the maturity of source systems. Avatar security was improved with the latest version of JBoss, which allows for the use of higher versions of Java and converts the system from an HTTP connection to an HTTPS connection. The revised CES automated their data consolidation process, reducing the amount of manual effort required to transfer data from their data collection forms and protected both the revised CES and all data collection worksheets to prevent unauthorized changes to these documents.

With the launch of CONNECT in November 2021, the Office of Licensing adopted a more mature source system compared to OLIS. CONNECT allows for enhanced security features including roles-based access for both Licensing Staff and providers, and allows for providers to assign security-based roles for staff members within their own organization. Further, the system allows the Office of Licensing to automate workflows, accept payments for licensing fees and FOIA requests, and send automatic reminders to providers to inform them the status of updates, applications, corrective actions, and due-dates; improving the timeliness of data collection within the system.

OISS will be integrating several new features within WaMS that will improve the maturity of the source system, including the adoption of multi-factor authentication to improve system security, and an auto-save feature to ensure that users do not experience catastrophic data loss resulting from system or connectivity issues.

Potential Replacements and Integrations:

Over the last fiscal year, several developments have taken place that will result in the replacement or integration of some DBHDS Source Systems assessed in the original DQMP report. In June 2021, agency leadership found that CHRIS-SIR, CHRIS-HR, and PAIRS were no longer able to adapt to meet the needs of the agency and decided that a replacement system would be necessary to usurp the functionality of these systems. The agency plans to replace these three systems with a unified Incident Management system; and as a result, will only amend the original systems with a focus on maintaining the systems until the time in which a replacement has been procured and integrated into the agency workflow. Currently, the Incident Management system project is in the procurement phase and has no defined target completion date.

The Business Owner of Avatar also indicated the intent to replace Avatar in the coming years. At present, this project is in the Statement of Work phase, with an estimated completion date of July 1, 2024. The Electronic Mortality Review Form (eMRF) is currently a Microsoft Access based application and the Business Owner indicated they are currently working to replace the system by July 1st, 2022; however, no details of the replacement were provided.

During fiscal year 2022 there was a concerted effort to replace the Children in Nursing Facilities spreadsheets with a PowerApp developed by DQV within the Microsoft 365 data platform. However, this project was ended by IT prior to deployment. At present, the Business Owner and

her team acknowledge that their current spreadsheet does not meet the needs of the business area, and therefore continue to seek a replacement for this system.

Lastly, two Source Systems assessed as part of the DQMP are undergoing the process of being integrated into WaMS as modules at various stages of development. A project has been underway over the last year to integrate the RST workbook into WaMS, and is currently in the design phase with a projected completion date of July 1st, 2022. The Individual Family Support Program (IFSP) web application was originally being developed as a standalone web application with a launch of Fall 2021. However, due to issues with system security, it has been determined that this process would likely benefit from being integrated into the WaMS Waitlist Portal. At present, the IFSP integration is still in the early phases of development with a target launch of Fall 2022.

Conclusion

Over FY2022, DBHDS business owners and SMEs have taken many steps to address known data quality issues within DBHDS Source Systems. Further, several business owners are taking steps to procure new source systems to replace several outdated systems, integrate these sources into more mature systems, or make 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 is conducting another assessment to develop actionable recommendations. This includes the execution of an entirely new methodology by which DQV shadows personnel that enter the data, obtains access to the appropriate system environment to test the data, and conducts interviews with numerous personnel to obtain the most holistic perspective of each system. Through this in-depth process, DQV identifies major threats to data validity and reliability within each source system and develops a list of actionable recommendations that must be successfully addressed by IT or the Business Owner. At the time of this report, DQV has completed four Actionable Recommendations assessments, and will continue to conduct these assessments until each of the original source systems or their replacements have been reviewed. Concurrently, IT must collaborate with the respective business areas to address findings from the initial DQMP source system and data warehouse assessments.