Bonnie, MAT and MADiE User Group

April User Group

Hosted by:
ICF
April 20, 2023

Disclaimer

This meeting is being recorded to ensure notes and action items are captured accurately.

Attendees who have objections to the meeting being recording are asked to let the facilitator know at this time.

Agenda and Objectives

Agenda

1. MAT Updates
2. Bonnie Updates
3. MADiE Updates
4. Community Questions & Discussion
5. Review of Resources

Objectives

- Inform MAT, Bonnie and MADiE users of current and planned activities
- Create a forum to gather community feedback on future enhancements
- Foster Collaboration through open community discussion

User Group Meeting Series

New User Group Meeting Series

- Begins with the May User Group on May 18, 2023
- Email communication will be sent to all active MAT, Bonnie and MADiE Users
- To receive the meeting appointment series, use the link in the email to register for the new series
- We welcome feedback for topics, agenda items or suggestions for improvement!

Measure Authoring Tool

MAT 6.10 QDM & FHIR

Measure Authoring Tool: Current State

MAT 6.10

- MAT 6.10
- Maintenance release on 11/16/22 included:
    - Ability for measure owners to transfer FHIR measures from MAT to MADiE.
    - While a measure does not need to be versioned to transfer, clicking the transfer button will initiate the measure to be packaged and then transferred.
    - Once a measure is transferred, it cannot be transferred again.
    - The CMS ID can only be created in the MAT. If a CMS ID is needed, it will need to be assigned in the MAT before being transferred to MADiE.
    - Once measures are moved from MAT to MADiE, there is no longer an association between the applications. Changes in MAT will not be reflected in MADiE and vice versa.
- Release Notes are available on the MAT web site under Training and Resources - contains additional information about what information will be transferred based upon measure type.
- QDM measures continue to use version 1.5.3 of the CQL-ELM translator.
- FHIR measures continue to use version 1.5.4 of the CQL-ELM translator.

Measure Authoring Tool

Maintenance:
- Maintenance is usually zero down time.
- Any known downtime for maintenance will be communicated to all users via email.

Known Issues:
1. For FHIR measures, when the same CQL definition is used in Supplemental Data Elements (SDE) and as a Risk Adjustment Variable (RAV), the measure is not able to be packaged. Users will receive an error for 'duplicate id value'. The workaround is to create different definition(s) when they are needed in both SDE and RAV. (BonnieMAT-1212)
2. For FHIR measures, if the CQL Editor is used to enter value sets, the value sets are validated each time the CQL is saved. If the value set name and OID are not a match to the VSAC a CQL error will display and users may update the value set directly in the editor. When using the CQL Editor the 'Update from VSAC' button should not be used as this will display an 'Unable to Process' error message. This message does not prevent users from completing or saving work. They should continue to save their CQL to validate value sets in VSAC. (BonnieMAT-1235).

Bonnie

Bonnie 4.3.1 QDM (Prior)

Bonnie 5.1.2 QDM

Bonnie 6.2.5 FHIR

Bonnie Prior: Current State

Bonnie 4.3.1 Prior

- Supports QDM 5.5
- Requested patient conversion defaults implemented
- Users use HARP IDs for authentication
- Group Account functionality is available
- Users will receive a warning after 10 minute of inactivity and logged out after 15 minutes
- Bonnie 4.3.1 Prior maintenance release on 7/19/22
  - Privacy Policy button linking to the CMS Privacy Policy added on the landing page

Bonnie QDM: Current State

Bonnie 5.1.2 QDM

- Bonnie 5.1.2 QDM maintenance release on 7/19/22
  - Privacy Policy button linking to the CMS Privacy Policy added on the landing page
- Supports QDM 5.6
- Supports QDM/CQL and CQL 1.5
- Patient conversion functionality will remain disabled

Bonnie FHIR: Current State

Bonnie 6.2.5 FHIR

- Bonnie 6.2.5 FHIR released on 12/13/22
  - JSON export files for test cases exported following the release include the following updates:
    - The MeasureReport resource has been removed from JSON export files
    - The QI-Core Patient Profile URL has been added to all patients
    - The Medical Record Identifier has been added to all patients
  - Please note - test cases will still need to be updated to reflect QI-Core

Bonnie FHIR File Size

- A configuration change was made to increase the file size for measure uploads into Bonnie FHIR. Please contact the help desk if you receive an error when uploading a measure.

Bonnie FHIR Attributes

- Attributes supported by Bonnie FHIR are linked on the Bonnie and MAT issue tracker on the summary page
- Updates have been made to reflect the current state of attribute support, naming conventions and to add clarifying footnotes
- https://oncprojectracking.healthit.gov/support/projects/BONNIEMAT/summary

Bonnie

Known Issues:

- The QRDA export is not correctly reflecting relevant date time. There is no workaround. We don't have plans to address this in Bonnie at this time.
- For Bonnie FHIR, measures that include stratification are not displaying properly for users to test. There is no workaround at this time. We don't have plans to address this in Bonnie at this time.
- For Bonnie QDM, if the result of any CQL aggregate functions, such as Count, Min, Max, Average, etc, is 0, then Bonnie currently displays 'No Result Calculated'. The Execution Engine is producing the correct results. This is a display issue only. We don't have a planned release to address this in Bonnie at this time. (BONNIEMAT-1096)
- For Bonnie QDM, when measure observations are used in ratio measures, the measure observation logic is being executed against test cases, even if that test case did not first meet the numerator or denominator criteria. When measure logic cannot be modified, there is no workaround. This will affect the pass rate of the measure. There are not plans to address this in a future release. (BONNIEMAT-1106)
- For Bonnie QDM, the CQM Model used in Bonnie does not currently support the 'is' operator when it is referencing any 'entity', which can include practitioner, patient, organization care partner or location. Logic may be able to be altered as a workaround. (BONNIEMAT-1158)

Bonnie (continued)

Known Issues (continued):

- For Bonnie Prior, test cases that include certain QDM attributes are preventing test case conversion from QDM to FHIR. The QDM attributes are PatientEntity, CarePartner, Practitioner and Organization. A workaround of removing these QDM attributes will allow the conversion to process. (BONNIEMAT-1177)

- Bonnie currently uses version 4.0.2 of the Execution Engine. In this version, there are issues with appropriate handling of timezone offsets. This has been corrected in current versions of the Execution Engine and we are working with CMS and stakeholders to understand the priority of updating Bonnie QDM. (BONNIEMAT-1252) and (BONNIEMAT-1259)

- For Bonnie QDM, when creating a test case with Diagnostic Study, Performed, users are not able to add the facilityLocation attribute. (BONNIEMAT-1365)

60 Day Account Deactivation

Keeping your MADiE, MAT and Bonnie Accounts Active:

- In accordance with CMS and HHS security requirements, these tools have implemented an account deactivation policy for all users who have not logged in within the previous 60 days or more.
  - Activity in at least one of the three Bonnie environments (every 60 days) is needed to keep accounts active.
- Users will receive warning messages after 30 days of inactivity.
- After 60 days of inactivity, accounts will be deactivated.
- To access deactivated MAT accounts again, users will need to request reactivation of their account by contacting the Help Desk.
- To access deactivated Bonnie accounts again, users will need to request reactivation of their account by contacting the Help Desk.
- To access a deactivated MADiE account again, users will need to request the MADiE role in HARP.

*Keep your Bonnie, MAT and MADiE accounts active to continue to receive important email communications!

Bonnie and MAT: Future State

Bonnie and MAT Support:

- Bonnie and MAT will continue to be available following the release of MADiE.
- While it is the intention to sunset these tools in the future, no date has been set at this time.

All future MAT and Bonnie enhancements or updates will be evaluated for:

- Priority – Is it needed to support CMS contracted measure development work? Does it correct an issue?
- Level of Effort – Does this impact the delivery of future releases of MADiE?
- Benefit – Can users complete their work with or without the enhancement?
- Future MAT or Bonnie releases will be communicated to users during User Group, community and stakeholder meetings and via email communication.

MADiE

MVP 1.1.2

MADiE Release Timelines

☑ **MADiE – 1.1.1 – 4/11/2023 Release**
- Validations added for export and saving test cases
- All users may now run test cases for all measures
- Updated to FQM Execution 1.0.8
- Updated to CQL Translator 2.7.0

☑ **MADiE – 1.1.2 – 4/20/2023 Release**
- User Enhancements to versioning
- Add Population Logic and descriptions to Human Readable
- Test Case Execution Enhancements
- LiquidBase Template Updates

MADiE – 1.1.3 – Early May Release

MADiE – 2.0.0 - July 2023 Release
- QDM Data Model Support
- QDM Measure, library and test case support
- Test Case Export

MADiE Release Schedule:
- MADiE releases will occur approximately every two weeks.
- Goal: Provide users with frequent delivery of high-quality features and correction of defects.
- Users will be notified via email and Release Notes will be made available on the MADiE MVP tab of the MAT public web site.

MADiE Known Issues

Known Issues as of 4/20/23:

Known Issues List will be posted and maintained on the [MADiE MVP tab](#) of the MAT public web site and the Summary page of the Bonnie MAT MADiE ONC Jira Issue Tracker here: https://oncprojectracking.healthit.gov/support/projects/BONNIEMAT/summary

CQL-to-ELM Translator Known Issues

There is an issue in how reasonCode is getting mapped to ELM for the CommunicationNotDone datatype in QI-Core 4.1.1. Refer to the following GitHub ticket for more information on this issue: https://github.com/cqframework/clinical_quality_language/issues/1153 BONNIEMAT-1420

Liquid Templates Known Issues

Liquid Templates do not currently support direct reference codes-refer to the following GitHub ticket for more information on this issue: https://github.com/cqframework/sample-content-ig/issues/8 BONNIEMAT-1430

MADiE Known Issues

MADiE Known Issues:

- CQL Validation issues occur when a definition name is resolvable to a quoted identifier, but the definition name is not in quotations. Users may not receive CQL validation errors, however the Population Criteria section won't render, and a blank screen will display
  - Work around: Quotes should be added to all define statement names, even when resolvable to a quoted identifier.
- When users search for measure names and include special characters in the search criteria, the user may receive a 403 error, or the search results will not be returned.
  - Work around: Only include alpha numeric characters when searching for a measure.
- Users may receive VSAC timeout errors, even when active in UMLS.
  - Work around: As this issue is intermittent, if a user receives an error indicating a 401 or VSAC timeout error when saving, users should follow these steps if this occurs. Copy the updates you were saving, navigate away from the tab, navigate back to the tab to paste the updates, and save again. BONNIEMAT-1330

MADiE Known Issues (continued)

MADiE Known Issues

- MADiE had previously introduced validations to help users create QMIG-compliant population criteria. MADiE is currently incorrectly validating the use of some functions. When the CQL contains a function with a complex argument type in the primary library, users may receive an error when trying to create a population criteria: 'Failed to create the group'.
  - Work around: The user may create a standalone library with this function and then reference that function through the appropriate include mechanism available in CQL BONNIEMAT-1343

- When a user selects a Measurement Period (MP) Start and End date, MADiE is inappropriately appending the current system time to the MP Start and End date. Users are unable to edit the time. For example, if a user is logged into MADiE at 5PM and selects the MP, the MP is recognized as 2023-01-01 at 5PM to 2023-12-31 at 5PM. MP time should start at 00:00AM and end at 23:59PM. BONNIEMAT-1350

- When a measure containing a standalone CQL Library is calculated against test cases it utilizes the ELM that was translated at the time the library was versioned. If it was versioned by an earlier version of the Translator, the user may receive inaccurate test results or error messages.
  - Work around: Users may draft their version of the CQL Library and version it again. This will ensure the library uses the most current version of the Translator in MADiE. Users would need to update their measure to reference the updated version of the library. BONNIEMAT-1343

MADiE Known Issues (continued)

- When a measure that is not endorsed by NQF is transferred from MAT to MADiE, the measure bundle will include an entry for NQF that will not include a value.
- When MADiE saves the Measurement Period end date it is converted to its UTC representation. For example, if the user is in Central Time and saves 12/31/2012 as the MP end date, it will be saved as 2012-12-31 06:00:00.000Z, which is equivalent to 12-31-2012 00:00:00.000 CT.
    - **Work around:** Adjust JSON end times by moving the time back by the number of hours to account for the time zone variance between the user and the test case data plus one more hour to account for the Measurement Period end date occurring at midnight. 12/31/2012 08:15Z would become 12/31/2012 05:15Z, which in JSON would be "2012-12-31T05:15:00.000Z". BONNIEMAT-1394
    - **Note:** CMS measure developers have been directed to NOT update test cases with this work around. This work around may be used to verify the reported timing issue is the reason a test case is not receiving expected results. The work around remains an option for measure developers not working on CMS measures.
- Measure export may fail when the population criteria description includes some symbols. Less than (<) and ampersand (&) symbols have been identified as causing export to fail if they are included, but additional symbols may have this effect as well.
    - **Work around:** Write out the symbol meaning in the population criteria description. For example, use 'less than' rather than using '<'. BONNIEMAT-1429

MADiE Known Issues (continued)

- Currently, measure sharing is being affected when a draft or version is created for a measure. Please review the scenarios below for impacts and work arounds.
- **Measures owned by a user:**
  - When a user creates a version/draft of a measure that they own, they will remain the measure owner for the version(s)/drafts(s) they create. If another user needs to edit the draft or create a draft from the version(s), this measure owner would need to submit a measure sharing request for another user to have the ability to make edits in the measure or test cases. Until that sharing request is submitted and completed the version/draft would be view only on the 'All Measures' tab.
  - Any measure sharing that was completed for a prior version doesn't carry forward with the version/draft that is being created and a new measure sharing request will need to be submitted.
- **Measures shared with another user:**
  - When a user creates a version/draft of a measure that is shared with them, they will be the measure owner for the version(s)/draft(s) they create, and the original measure owner does not have editing ability. If another user needs to edit the draft or create a draft from the version(s), the measure owner of the new version/draft would need to submit a measure sharing request for another user to have the ability to make edits in the measure or test cases. Until that sharing request is submitted and completed the version/draft would be view only on the 'All Measures' tab.
- **Work around:** To retain the same measure owner for all future versions/drafts of a measure, the measure owner should create all versions/drafts rather than users the measure was shared with. After the measure owner creates a version/draft a new measure sharing request will need to be submitted for another user to have the ability to make edits in the measure or test cases BONNIEMAT-1442

MADiE Resources

MADiE MVP

- The [MADiE MVP tab]() on the MAT public web site provides:
  - Login button to MADiE
  - User Access Guide – how to get your MADiE account
  - User Guide – provides details regarding tool functionality
  - JSON Test Case Guide – steps for using the JSON test case editor
  - Known Issues – updated regularly
  - Release Notes – posted with each MADiE release
  - MADiE Measure Sharing Request Form v1.1 – to request measures and test cases be shared – submitted by the owner

MADiE Resources (continued)

MADiE QI-Core Profile Examples

- The MADiE team has created a measure in MADiE with an included test case JSON bundle which contains entries for many QI-Core (v4.1.1) profiles.

- The purpose of this test case JSON bundle is to provide users the framework for commonly used QI-Core v4.1.1 profiles that can be leveraged with their own test case development.

- The measure (**QI-Corev4.1.1 Test Case Template)** is a blank measure (no CQL and no Population Criteria) with one test case (**QI-Corev4.1.1 Example Bundle version 2**).

- The QI-Core profiles examples in the JSON bundle are for guidance and are not intended to fulfill any measure or testing requirement. Updates to reflect the specific details of your test case will be necessary.

- Measure developers may copy any of the profiles from the QI-Corev4.1.1 Example Bundle version 2 test case directly to your test case(s) or use a source code editor (e.g., Notepad++ and Visual Studio Code) and make any updates needed to meet your testing needs.

- The MADiE Test Case JSON Guide, available on the [MADiE MVP tab](#) of the MAT public website, has been updated with detailed information regarding the **QI-Corev4.1.1 Example Bundle version** test case in MADiE and provides additional guidance for using this resource to aid MADiE users in updating or creating test cases in MADiE.

Updated Help Desk Ticket Submission Process

- The MAT_Bonnie_MADiE_TicketSubmissinGuidance document provides guidance to measure developers needing assistance with measures or test cases. This document includes the following:
  - Steps to take prior to submitting a Help Desk ticket
    - Review available documentation
    - Consult with SMEs
  - **A list of artifacts to include if a ticket is being created with either tracker for assistance with measure CQL or test case JSON**
    - Measure Export, Full measure CQL in a .txt file, full test case JSON in a .txt file
    - **Do not** send screen prints of partial CQL and/or JSON
  - The types of tickets to submit to the [CQL Issue Tracker](#)
    - Tickets submitted to the CQL Issue Tracker will be evaluated and the standards team may identify the ticket needs to be moved on to the Bonnie MAT MADiE Issue Tracker to evaluate MADiE, MAT and Bonnie functionality
  - The types of tickets to submit to the [Bonnie MAT MADiE Issue Tracker](#)

CQL Libraries

Global Shared Libraries in MADiE:

Commonly used libraries were entered into MADiE following the MVP release.

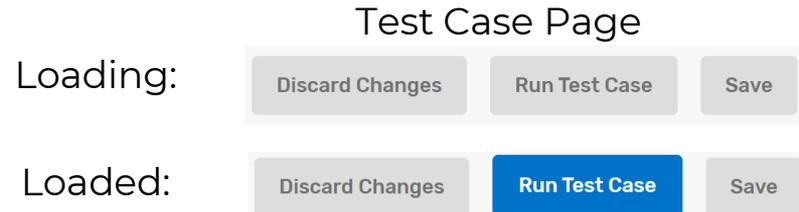| FHIR Name in MAT	Version in MAT	QI-Core Name in MADiE	Version in MADiE
MATGlobalCommonFunctionsFHIR4	V 7.0.000	CQMCommon	V 1.1.000
FHIRCommon	V 1.1.000	FHIRCommon	V 4.2.000
FHIRHelpers	V 4.1.000	FHIRHelpers	V 4.2.000
QICoreCommon	V 1.0.000	QICoreCommon	V 1.3.000
CumulativeMedicationDurationFHIR4	V 1.4.000	CumulativeMedicationDuration	V 3.0.000
SupplementalDataElementsFHIR4	V 3.0.000	SupplementalDataElements	V 3.2.000

CQL Libraries (continued)

CQL Libraries owned by MAT users:

- Standalone CQL libraries will not transfer like measures.
- Library owners will need to create the shell library in MADiE and then copy and paste the contents of the library from MAT into the library in MADiE.
- To ensure your library version number matches what was in MAT and used by your measure, users will need to major/minor version their library until the desired version number is reached.
- Reminder, versioned libraries cannot be deleted so version carefully.

Loading Value Sets in MADiE

- MADiE utilizes a connection to VSAC when a user accesses the Test Case tab.
- For measures that contain a large number of value sets or value sets with large amounts of data, users may experience a delay in the Test Case table or a test case selected to view/edit fully loading.

Test Case Table

Loading: [+ New Test Case] [Run Test Cases]

Loaded: [+ New Test Case] [Run Test Cases]

Test Case Page

Loading: [Discard Changes] [Run Test Case] [Save]

Loaded: [Discard Changes] [Run Test Case] [Save]

- If a user interacts with the Test Case tab before it fully loads, they may receive the following error, "An error exists with the measure CQL, please review the CQL Editor tab".
- If there are no errors on the CQL, this error message can display when the value sets have not had time to load on the Test Case tab.
- Users should wait until all content is loaded and all buttons on the page are enabled.

Community Questions & Discussion

User Group Discussion

Test Case Warnings Discussion

- MADiE has been asked to "turn off" Test Case warnings
- MADiE has the following Test Case Notifications
  - Errors - Displayed in red
    - Come from HAPI FHIR Validations
    - Shows errors in the JSON ie. Incorrect json types, missing required elements, anything unknown in the test case, etc.
  - Warnings – Displayed in Yellow
    - Come from HAPI FHIR Validations
    - Shows things that are not invalid but users may want to reconsider using that element
  - Meta Profile Warnings – Displayed in Yellow
    - MADiE added in
    - Warns users they are missing Meta.Profile in resources. These are needed to help FQM Execution engine complete profile informed execution
- HAPI FHIR has two possibilities for error handling
  - LenientErrorHandler – does not populate errors or warnings up to the user
  - StrictErrorHandler - Populates errors and warnings to the user *** Currently used in MADiE**

User Group Discussion (continued)

- Topic suggestions and questions for the User Group can also be submitted through the Bonnie MAT Issue Tracker located here: https://oncprojectracking.healthit.gov/support/projects/BONNIEMAT/summary

- Additional questions or comments can be submitted by using the chat feature or unmuting your own line.

Reminder when submitting tickets...

MAT Tickets
- Indicate the tool type and Measure Model: QDM vs. FHIR
- Attach the measure package if appropriate
- Provide Screenshots of error messages

Bonnie Tickets
- Be sure to indicate tool type: Prior, QDM, FHIR
- Attach the affected test cases and reference them in the ticket by name if possible
- Attach the measure package used with the test cases
- Provide which account was used to test the measure(s)

MADiE Tickets
- ONC Jira is now updated to reflect MADiE
- All measure sharing requests or inquiries with a HARP ID must be submitted via email at semanticbits-madie-help@icf.com
- Questions about updating measure CQL or test case JSON to resolve validation errors or unexpected actual results should be submitted to the CQL Issue Tracker. If after CQL or JSON updates are identified and resolved questions/issues remain the ticket will be moved to the MADiE team for review.
- Attach the measure package and affected CQL and test case JSON, if appropriate, as text files and reference them in the ticket by name

Resources

PHI/ PII

- PHI and PII are prohibited in MAT, Bonnie or MADiE.

- Measure testing should only represent synthetic patient test data.

- Report any questions or concerns to the Help Desk.

Resources for Users

Bonnie and MAT Troubleshooting Guides

- Located on the ONC Jira Bonnie MAT Issue Tracker – Summary page
  - [Bonnie Troubleshooting Guide](#)
  - [MAT Troubleshooting Guide](#)

Tool Release Table

- Located on the MAT public website under Training and Resources/MAT Helpful Links
  - [Bonnie, MAT and MADiE Release Schedule](#)

Negation Rationale in Bonnie FHIR

- Located on the MAT public website under Training and Resources/Bonnie Helpful Links
  - [Bonnie FHIR: How to use Negation Rationale](#)

Resources

MAT Public Website:
https://www.emeasuretool.cms.gov/

MAT 6.10:
https://www.emeasuretool.cms.gov/MeasureAuthoringTool/Login.html

Bonnie 4.3.1 QDM (Prior) (QDM version 5.5):
https://bonnie-prior.healthit.gov/

Bonnie 5.1.2 QDM (QDM version 5.6):
https://bonnie.healthit.gov/

Bonnie 6.2.5 FHIR:
https://bonnie-fhir.healthit.gov/

MADiE MVP – 1.1.2
https://madie.cms.gov

Bonnie MAT MADiE Issue Tracker:
https://oncprojectracking.healthit.gov/support/projects/BONNIEMAT/summary

eCQI Resource Center:
https://ecqi.healthit.gov/