

Figure 1: CMS Logo



Measure Authoring Tool Release Notes

Version 5.6.0
October 16, 2018

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Enhancements

A description of the enhancements included in the Measure Authoring Tool (MAT) version 5.6.0 are listed below. There are significant updates to the MAT version 5.6.0 including

1.0 Updated the MAT to Version 5.6

Any new measures created, or any measures drafted since the MAT version 5.6 release, will now show 5.6 as the version number on the tooltip for the export icon.

1.1 Updated to version 1.3.10 of the CQL to ELM Parser

The MAT has updated the CQL to ELM parser that is used to check the CQL logic to the release v1.3.10

1.2 Increased performance on the search for included libraries

The MAT has increased performance on wait times when searching for libraries to be included into a measure or a stand-alone CQL library.

1.3 Updated the MAT to align with CQL R1 STU3

The MAT has made changes to incorporate CQL R1 STU3 which includes adding new pre-defined functions “GeometricMean()” and “Product()”, adding new keywords “expand” and “per”, and adding new datatypes for use as function arguments “Date” and “Ratio”.

1.4 Updates to the database

The MAT has made several updates to the database to improve performance and to enable some of the new functionalities incorporated into the MAT. Some of these updates include storing artifacts upon packaging, new tables and fields to accommodate composite measures, and new columns to store additional metadata about the measures which will improve search and packaging functionality.

1.5 Implemented a time-out feature for VSAC retrieval

If no response has been received by the MAT from the VSAC within 60 seconds of sending the request, the request is terminated, and the user is presented with a message asking them to try the action again or to contact the MAT Support Desk if the issue persists.

1.6 Changed the CSS styling on the Measure Packager Screen

The Measure Packager screen has had updates to the CSS styling to more closely match the rest of the tool.

1.7 Masking of security question answers as they are typed

The characters typed by a user when entering the answers to their security questions, are now hidden to prevent others from seeing what is being typed. In addition, once the entry is complete, what will show

in the field is eight masked characters irrespective of how many characters are in the answer. This is to prevent others from guessing answers that were entered.

1.8 Restrict the use of CQL Keywords as expression names or aliases

The MAT will now prevent users from naming their CQL expressions or assigning aliases to their included libraries or component measures with CQL Keywords. Using a keyword as a name or an alias has the possibility of causing errors within the CQL file and preventing the measure from packaging. Users will now be asked to choose a different option.

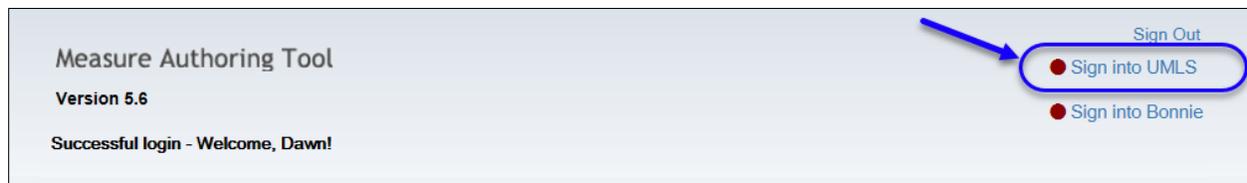
1.9 Prevent measure observations in a Ratio, Patient-based measure

The MAT will now ensure that the Measure Observation section in the Population Workspace will no longer show if the measure is a Ratio, patient-based measure. This measure type should not contain measure observations.

1.10 Moved the UMLS login to the tool header

The MAT has removed the UMLS Account tab that used to load just after a successful login to the MAT. This second login was confusing to MAT users. The UMLS login has now been moved into the header of the MAT tool with the indicator light. Having this login in the header allows users to log in to UMLS without having to navigate away from the portion of the tool they are working in. For example, if a user is working on a measure and has not yet logged in to UMLS, and they determine that a new value set is needed, while still on the Value Set section of the CQL workspace, the measure developer can now click on the link in the header, enter their credentials, and complete the login, without having to leave the measure or the value set section.

Figure 2: UMLS Login in MAT Header



1.11 Create a measure package upon version

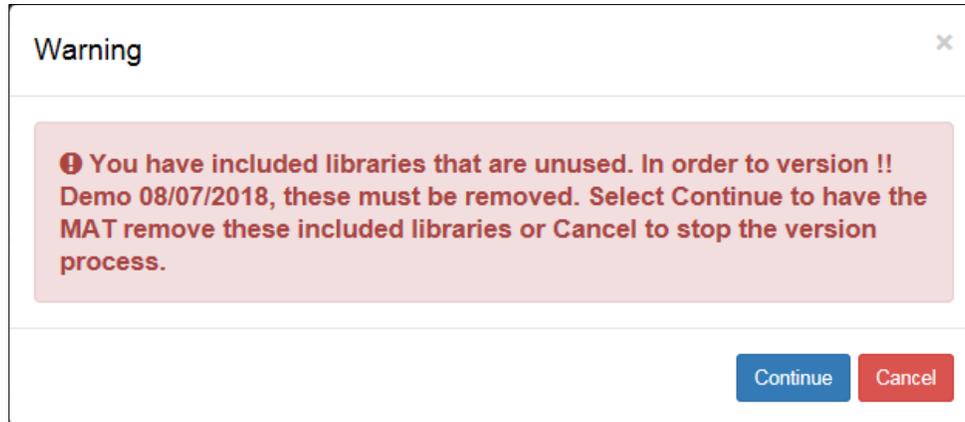
The MAT will now attempt to create a measure package when a user creates a version of their measure. This is to ensure that the version has all of the most recent updates made by the measure developers. If the measure package fails, the user is then given the choice of continuing to version their measure without a fresh package created or canceling the action and going back to fix any issues.

1.12 Remove unused included libraries upon version.

The MAT will now check all measures and stand-alone CQL libraries when versioning to see if they have any libraries that were included in the Includes Section but were never actually referenced within the CQL logic. The user will then be presented with a message stating they have unused libraries and that if

they click on continue, the MAT will automatically remove them. The user can also choose to cancel the version process and go back to correct the CQL logic to include all included CQL libraries.

Figure 3: Message for Unused Libraries



1.13 Updated the Revision Number handling upon draft

The MAT will now ensure that the revision number of a measure that was created before the MAT version 5.4 and is now drafted to become a CQL measure is set to .000 to match the other measures in the system.

1.14 Changes to the NQF number field on the Measure Details

The MAT has made changes to the Endorsed by NQF field and the NQF number field. When the Endorsed by NQF field is set to “No”, the NQF number field will automatically fill with “Not Applicable” and will be disabled. When the Endorsed by NQF field is set to “Yes” the NQF number field will enable and will be a required field.

1.15 Added a comment box on the General Information Section

This is a user requested enhancement. The MAT now has a comment box on the General Information Section of both the CQL Workspace and the CQL Composer. These comment boxes are there to allow measure developers the opportunity to add a comment that applies to the CQL library as a whole. In other words, it allows for comments that are specific to a particular expression but to all of the CQL file. Comments entered here will only appear in the CQL file export and in the View CQL Section of the CQL Workspace or the CQL Composer. These comments will not appear in any other export.

1.16 Renamed Edit icon on the Includes Section

The Edit icon on the Includes Section of the CQL Workspace or the CQL Composer has been renamed to Replace. This name more closely indicates the action being taken as a user is not editing the included library but simply replacing it with a different version of the same library.

1.17 *Removed Value Set Version*

To accommodate changes to the VSAC API, the MAT has removed the Value Set Version field and the Version column in the Applied Value Sets table.

1.18 *Added Program column to Applied Value Sets*

A Program column has been added to the Applied Value Sets table on the Value Sets section. This column will show which program was chosen when a value set was retrieved.

1.19 *Removed requirement for a Release selection when Program is selected*

With the changes to the VSAC API it is now possible to retrieve a value set using a program without having to select a release and get back the most recent profile for that program. To accommodate this, the MAT has removed the requirement for a release selection when a program is chosen.

1.20 *Select All Feature for Copying Value Sets and Codes*

This is a user requested feature. The MAT added a Select All icon above the Applied Value Sets and Applied Codes tables that will select all of the value sets/codes in the table for copying.

1.21 *Removal of Birthdate and Dead Codes as Default Codes*

The Birthdate and Dead codes will no longer be added as default codes in the MAT. If a measure developer would like to use them within their logic, they will need to add them like any other code. This will prevent these codes from coming out in the exports for measures in which they were not used. When an existing measure is drafted the MAT will check to see if the Birthdate and/or Dead codes have been used and will remove them if they have not.

1.22 *Updates to Allow Special Characters in Code Descriptors*

The MAT will now remove any single quotes, double quotes, or backslashes from the code descriptors when using them in the CQL logic to prevent any potential issues. These characters will also be escaped in the exports so that they do not cause an issue in the XML export documents.

1.23 *Include support for Intensional Value Sets*

In preparation for the future support of Intensional Value Sets by VSAC, the MAT has made updates to provide the user with an indicator showing that the Value Set retrieved by the user is an Intensional Value Set.

1.24 *Updated to QDM version 5.4*

The MAT has been updated to now use the QDM version 5.4. The following updates were made to the available datatypes and attributes to align with the QDM version 5.4.

- Added Assessment, Order datatype
- Added Assessment, Not Ordered

- Removed Communication: From Patient to Provider datatype
- Removed Communication: From Patient to Provider, Not Done datatype
- Removed Communication: From Provider to Patient datatype
- Removed Communication: From Provider to Patient, Not Done datatype
- Removed Communication: From Provider to Provider datatype
- Removed Communication: From Provider to Provider, Not Done datatype
- Added Communication, Performed datatype
- Added Communication, Not Performed datatype
- Added category, medium, sender, and recipient as available attributes for the Communication, Performed and the Communication, Not Performed datatypes
- Added daysSupplied as an available attribute for Medication, Discharge, Medication, Dispensed, and Medication, Order
- Added perscriberId as an available attribute for Medication, Dispensed and Medication, Order
- Added dispenserId as an available attribute for Medication, Dispensed
- Removed anatomical approach site as an available attribute in the MAT
- Added Setting as an attribute for Medication Order
- Removed Method as an attribute from Assessment, Recommended, Diagnostic Study, Order, Laboratory Test, Order, Physical Exam, Order, Procedure, Order, Diagnostic Study, Recommended, Laboratory Test, Recommended, Physical Exam, Recommended, Procedure, Recommended, Substance, Recommended, Medication, Order, and Substance, Order.
- Removed supply as an attribute from Medication, Active, Medication, Administered, Substance, Administered, and Substance, Recommended, and Immunization Administered datatypes

1.25 Removed the nesting restrictions for the Included CQL Libraries.

The MAT has removed the previous restriction for the number of libraries that can be included in another library or in a measure. This included a change to how the measures are packaged and the exports produced to accommodate the removal of the restriction.

1.26 Removed extra spaces in the View CQL section

The MAT has updated the way the included library declarations show in the View CQL section of the CQL Workspace and the CQL Composer. These declarations are now grouped together without extra spaces in between them to make them more closely match the other sections in the CQL file view.

1.27 Disabled actions on the Measure Library and CQL Library while loading

The MAT now ensures that all actions on the Measure Library page and the CQL Library page are disabled while screen loading is in progress.

1.28 Changed the export options on the Export Screen

The MAT has separated the eCQM option on the export screen into two separate icons that are more descriptive of the type of file you are selecting. Measure developers will now see a radio button labeled Human Readable and another one labeled HQMF.

Figure 4: Export Options

Select an export option:

Human Readable

HQMF

CQL Library

ELM

JSON

eCQM Package

Save Open Cancel

1.29 Updates to the Export documents

The MAT has made several updates to the exports to accommodate new regulations and the addition of composite measure support. The following updates have been made.

- Reorder of the Population Criteria section of the Human Readable
- Updated the HQMF Template ID Extensions per the CQL HQMF Implementation Guide
- Updated the HQMF Measure Attribute Templates to align with the CQL HQMF Implementation Guide
- Updated the Measure Observation Definition HQMF Template to align with the CQL HQMF Implementation Guide
- Updated the Data Criteria HQMF Templates to align with the CQL HQMF Implementation Guide
- Updated references to CQL/ELM/JSON files to use URLs, identifiers, and versions
- Updated the HQMF for use with composite measures
 - Added Composite Measure Method
 - Added references for Component measures
- Added component measures as included in the CQL File Export for a composite measure
- Added Composite Scoring Method to the Human Readable export
- Ensured that, for a Cohort measure, the Stratification section will display under the Population Criteria section of the Human Readable stating None if no stratification has been added
- Updated the CQL file to include comments added for a parameter expression.

1.30 Added support for Composite Measures

The MAT has made several updates to accommodate the creation, editing, packaging, versioning, and drafting of composite measures. The following items have been added to or modified for composite measures.

- Added a New Composite Measure button to the Measure Library screen
- Added a Composite Scoring Method field to the new measure creation selections
- Added a new Component measure screen to the measure creation options
- Added validations to the component measure screen to ensure the component measures chosen will work with the type of composite measure chosen
- Made changes to the measure details page for composite measures
 - Moved the component measure list to the Click to View General Measure Information section
 - Removed composite as an option for measure type as the MAT will note this automatically when New Composite Measure is chosen
 - Removed the component measure list section for non-composite measures
- Added a New Components section to the CQL Workspace
- Added Edit screens for composite measures and component selections
- Added the ability to replace a component measure with another version of that measure without having to change the alias assigned to the component
- Removed the Create New Grouping button and Measure Grouping list from the Measure Packager Screen
- Added the ability to package a composite measure
- Created the export screen for composite measures with only one option for the complete composite measure package.
- Added validations to the packaging buttons
- Added validations to the supplemental data elements and the risk adjustment variables
- Added the ability to draft a versioned composite measure
- Disabled the clone icon for a composite measure
- Added the ability to Delete a composite measure if the user is the owner of the measure
- Added the ability to use the component measure expressions, value sets, and codes within the CQL logic of the composite measure
- Removed the ability to delete a measure if it is used as a component measure within a composite measure

Figure 5: New Composite Measure Button

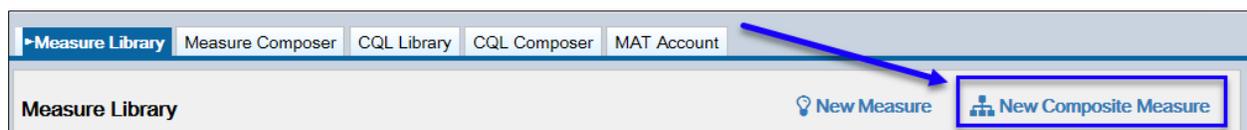


Figure 6: Component Measures Screen

My Measures > Create New Composite Measure > Component Measures

Perform a search for a list of available component measures. Select component measures with the checkbox in-line with the measure name and assign each component measure an alias.

comp Q Search

| Available Measures | | | | | |
|---------------------|---------|-----------------|-------------------------|--------------|-------------------------------------|
| Measure Name | Version | Measure Scoring | Patient-based Indicator | Owner | Select |
| Component Measure 1 | v1.0 | Proportion | Yes | MAT TestUser | <input checked="" type="checkbox"/> |
| Component Measure 2 | v1.0 | Proportion | Yes | MAT TestUser | <input checked="" type="checkbox"/> |

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| Applied Component Measures | | | | | |
|----------------------------|---------|-----------------|----------------------------|---------|--------|
| Measure Name | Version | Measure Scoring | Assign Alias | Replace | Delete |
| Component Measure 1 | v1.0 | Proportion | Comp1 | | |
| Component Measure 2 | v1.0 | Proportion | Comp2 <input type="text"/> | | |

Go Back Save and Continue Cancel

1.31 Added an interface with the Bonnie tool

The MAT has incorporated the Bonnie API. The following updates have been made to accommodate the communication with the Bonnie tool.

- Added a login link and status indicator to the header of the MAT
- A successful login will redirect the user back to an active MAT Session
- Added a new Upload to Bonnie tab onto the export screen for measures using the current version of the QDM.
- Added the ability to revoke Bonnie tokens at the Admin level
- Added support for the encryption of the Bonnie Tokens

Figure 7: Sign into Bonnie Link

Measure Authoring Tool

Version 5.6

Successful login - Welcome, Dawn!

Sign Out

- Sign into UMLS
- Sign into Bonnie

1.32 Updates for Accessibility

The MAT follows guidelines outlined in Section 508 of the Rehabilitation Act to ensure that all users have the ability to utilize the tool. The MAT has made the following updates to increase its accessibility in relation to these regulations.

- Users using a screen reader will be notified when the field they have accessed is a required field.
- Users using a screen reader will be notified when component measures have been added or removed from the Applied Component Measures table.

1.33 Made changes to the Admin Screens

The MAT made updates to the Administrator Screens to allow for better user and organization management. Some of the updates include Notes visible on the individual users' profile and redirects back to search results after an action is performed.

System Fixes

The following fixes have been made on the MAT v5.6.

2.1 Updated the codeSystem value for Measure Score and Measure Type

When a new measure is created or an existing measure is drafted, the codeSystem values for the measure attributes, "Measure Type" and "Measure Score" have been updated
"2.16.840.1.113883.5.1063"

2.2 Corrected organization duplication upon editing

The MAT is now preventing the overwriting of an organization in the MAT after an error message is received upon first try. This change only affects the Administrator pages of the MAT.

2.3 Re-enabled the Create Package and Export button after processing

The MAT is now ensuring that the create Package and Export button is re-enabled after it has been pressed once and the package has been created. This allows a user to immediately create and package again if they wish.

2.4 Corrected Measure Observations in a Measure Grouping for Ratio Measures

The MAT has closed a loophole that allowed a user following a specific set of steps to save a measure grouping for a Ratio measure that had more than two measure observations.

2.5 Corrected Numerator Exclusions in a Measure Grouping

The MAT has closed a loophole that allowed a user following a specific set of steps to save a measure grouping in a Proportion measure with more than one Numerator Exclusion.

2.6 Correction to the numbering of Measure Groupings

The MAT has corrected the Measure Grouping numbering in the user interface when a user has multiple groupings and deletes one. This issue only affected the user interface and did not have any impact on the measure exports.