Figure 1: CMS Logo

Measure Authoring Tool Release Notes

Version 5.8.0

August 27, 2019

Table of Contents

ENHANCEMENTS **4**

1.0 Updated the MAT to Version 5.8 4
1.1 Measure Library Advanced Search 4
1.2 References Cancel Button 4
1.3 New Revision Number After Package 4

STANDARDS UPDATES **4**

1.4 Updated to QDM 5.5 4
1.5 Updated to CQL R1 STU4 5
1.6 Updated to CQL-based HQMF IG R1 STU4 5
1.7 Updated to CQL-to-ELM Translator version 1.4.6 5
1.8 Updated Measure Type in HQMF 5

ACCESSIBILITY **5**

1.9 Updates for Accessibility 5

CQL WORKSPACE **6**

1.10 Default SDE Value Sets 6
1.11 Updating Direct Reference Codes 6
1.12 Disabling/Enabling of Apply Button for Direct Reference Codes 6
1.13 In-App Help 6
1.14 Renaming of Click to View CQL Areas 6
1.15 Renaming of CQL Editor 6
1.16 Renaming of View CQL Menu Option in Left-Hand Navigation 7
1.17 Added Retrieve Field Label 7
1.18 Includes Section – Unsaved Data Message 7
1.19 Replace Email with First/Last Names 7
1.20 Notification of Library/Keyword Match 7

CQL LIBRARY EDITOR **7**

1.21 MAT Account: Enable the CQL Library Editor 7
1.22 Writing CQL Expressions Within the CQL Library Editor 8
1.23 Find/Replace Functionality 9
1.24 Disabled Functionality if Read Only 9
1.25 Indication of Disabled CQL Editors 9
1.26 Editable CQL Library Names 10
1.27 CQL Library Name Length 10
1.28 Notification of Removal of Comments 10
1.29 Notification of Removal of Concept Declarations 10
1.30 Notification of Alias Uniqueness 10

1.31 Notification of Potential Library/Measure Review 10
1.32 Notification of Quotes Removal 10

EXPRESSION BUILDER 11

1.33 Added Support for Relationships 11
1.34 Added Support for Return Statements 11
1.35 Made Filtering Optional Within a Query 11
1.36 Deletion of Partial Phrases in Current Session 11
1.37 Filtering of Content Based on Return Type 11
1.38 Alphabetical Sort of Dropdowns 11

MEASURE PACKAGER & EXPORT SCREENS 11

1.39 Measure Packager Screen Display 11
1.40 Measure Names on the Export Screen 11
1.41 Expressions in the Formatter 11
1.42 Failed Measure Groupings 12
1.43 Remove Ratio Measure Stratifications 12
1.44 Notification of Improper Stratification Return Type 12
1.45 Spaces Within Identifiers 12
1.46 Notification of Required Security Questions Update 12
1.47 Alias Same as Identifier 12

Enhancements

A description of the enhancements included in the Measure Authoring Tool (MAT) version 5.8.0 are listed below. There are significant updates to the MAT version 5.8.0, including:

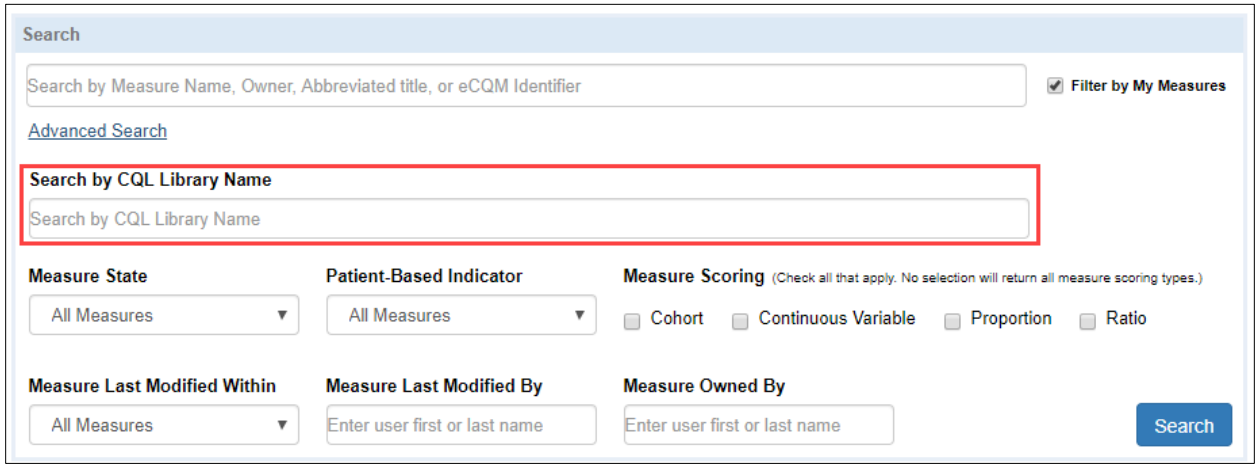
1.0 Updated the MAT to Version 5.8

Any new measures created, any measures drafted, or any measure packaged after the 5.8 release will now show 5.8 as the version number on the tooltip for the export icon.

1.1 Measure Library Advanced Search

The MAT now has an Advanced Search option that allows users to search for a measure using the CQL Library name.

Figure 2: Measure Library Advanced Search



1.2 References Cancel Button

The MAT now has a Cancel button on the References tab, allowing a user to view a previously entered reference and then cancel without making changes.

1.3 New Revision Number After Package

The MAT will now show the updated revision number at the top of the MAT pages after a successful measure package.

Standards Updates

1.4 Updated to QDM 5.5

The following updates were made to align with the QDM version 5.5:

- Updates were made to the graphical user interface and backend processing to align with QDM 5.5. For a list of changes to QDM, refer to the QDM 5.5 Errata on the eCQI Resource Center.
- Certain functions with the signature list <QDM> have been made available to see and use in the Expression Builder.

1.5 Updated to CQL R1 STU4

The MAT has made changes to incorporate CQL R1 STU4 which includes validation for library name uniqueness, the addition or updates of various functions, the use of qualifiers in retrieve code paths, removal of population context and support of related-context queries. For a list of updates to CQL, refer to the CQL R1 STU4 change log.

1.6 Updated to CQL-based HQMF IG R1 STU4

The MAT has made changes to incorporate new or updated constraints and templates provided in the CQL-based HQMF Implementation Guide (IG) R1 STU4. For a list of changes that occurred with the CQL-based HQMF IG R1 STU4, refer to the change logs within the respective volumes of the IG. The IG is available through HL7. Note: You will need to be logged into HL7 to download the IG.

1.7 Updated to CQL-to-ELM Translator version 1.4.6

MAT 5.8 uses the CQL-to-ELM Translator v1.4.6 to support the creation of valid CQL expressions and conversion of CQL to ELM. For a list of changes to the Translator, refer to the respective release on GitHub.

1.8 Updated Measure Type in HQMF

Based on updates to HL7 vocabulary standards, the Intermediate Clinical Outcome measure type will now be encoded in the HQMF export as INTERM-OM.

Accessibility

1.9 Updates for Accessibility

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

- The save button on the Population Workspace is now directly after the option choices, allowing users using a screen reader to navigate the page more easily.
- Previously, focus could be removed from the CQL editors in the MAT by use of the Tab key. This behavior was changed to assist users creating CQL expressions in the CQL editors. A 508 user can now exit all CQL editors using the Shift + Up Arrow or the Shift + Down Arrow.

- Messages provided in the CQL Library Editor after the save button is pressed will now be read in the correct order for users using a screen reader.

CQL Workspace

1.10 Default SDE Value Sets

The default Supplemental Data Element (SDE) value sets (i.e., Payer, Race, Ethnicity and ONC Administrative Sex) will now appear in the Applied Value Sets table and in applicable dropdowns. This change allows a user to access the default SDE value sets easily, should they be needed in other definitions or functions. If applicable, a user may also remove the default SDE value sets from a measure.

1.11 Updating Direct Reference Codes

Users are now able to update Direct Reference Codes in a measure or library through use of the code editor. To enable this ability, the Code URL field is available for editing, allowing users to modify the URL for the applicable code based on the latest code system release on VSAC. To obtain updates for a code from VSAC, users can edit their current code's URL by clicking the edit icon for the respective code, modifying the code URL for it and clicking the Retrieve button. An API request will then be made to the VSAC based on the modified code URL and the response will be used to update the user interface. To update the respective code in the Code table, the user can then use the Apply button, and the existing entry will be updated.

1.12 Disabling/Enabling of Apply Button for Direct Reference Codes

To promote consistent functionality, the Apply button within the code editor will now be disabled until the code has been retrieved again.

1.13 In-App Help

To provide more assistance to users, In-App Help has been added to or updated in various sections of the CQL Workspace. The In-App Help now also includes a link to the MAT User Guide.

1.14 Renaming of Click to View CQL Areas

The existing Click to View CQL areas in the Definition, Function, and Parameter sections have been renamed to CQL Library Viewer. This change is to help provide more clarity around this feature's function within the MAT.

1.15 Renaming of CQL Editor

The existing CQL Editor in the Definition, Function, and Parameter sections has now been renamed to CQL Expression Editor. This change has been made to help users distinguish between this portion of the user interface and the CQL Library Editor.

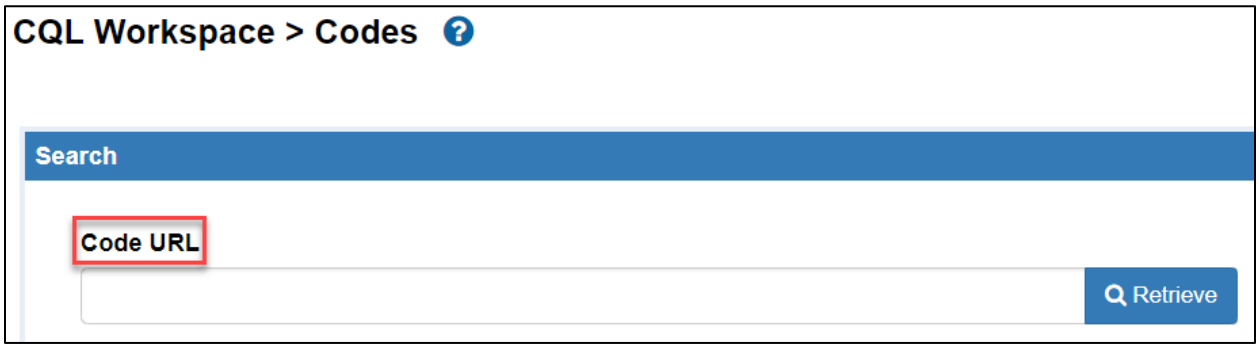
1.16 Renaming of View CQL Menu Option in Left-Hand Navigation

The View CQL menu option in the left-hand navigation of the CQL Workspace has been renamed to CQL Library Editor. The renaming of this label is to support the new free text editor functionality within this section. For more information on the free text editor, see the CQL Library Editor section below.

1.17 Added Retrieve Field Label

The retrieve field now has a title of "Code URL" on the Codes section of the CQL Workspace and the CQL Composer.

Figure 3: Added Retrieve Field Label



1.18 Includes Section – Unsaved Data Message

When a user has added an alias or searched and selected a library in the Includes section of the CQL Workspace and CQL Composer, the MAT will notify the user, if the user attempts to navigate away from the page without saving the change.

1.19 Replace Email with First/Last Names

The history tables on the Measure Library and CQL Library pages will now list the first and last names of the users rather than the email for previous and new actions.

NOTE: If an old email can't be mapped to a current user ID, the old email will continue to be displayed.

1.20 Notification of Library/Keyword Match

The MAT will now notify and prevent the user from choosing a CQL Library name that matches a CQL keyword.

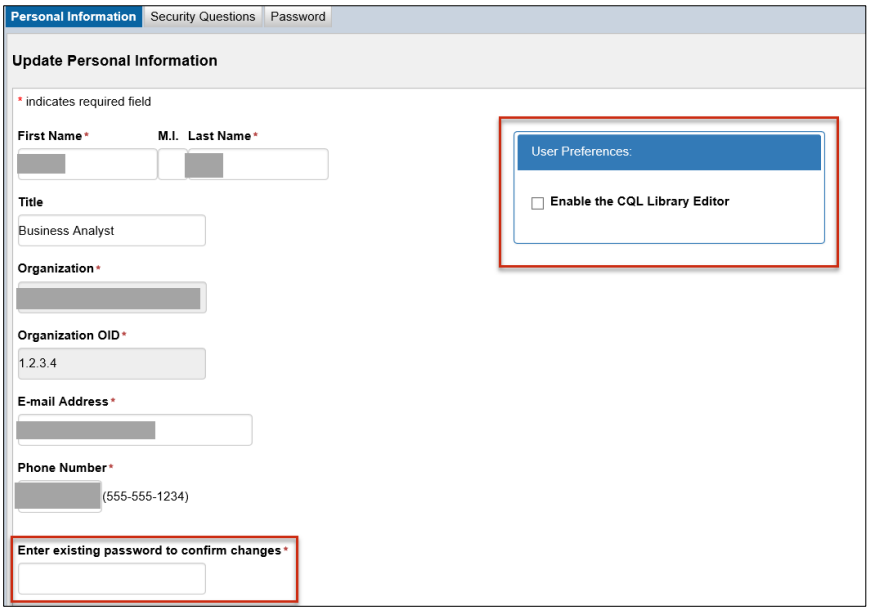
CQL Library Editor

1.21 MAT Account: Enable the CQL Library Editor

The section tied to the CQL Library Editor menu option (previously named 'View CQL') has been redesigned to support free text editing. By default, this section is "Read Only". To enable free text

editing within this area, a User Preference checkbox was added to the MAT Account section. By default, this checkbox is unchecked. A user who would like to use the free text editor capability can check this box, enter his/her password and click the Save and Continue button.

Figure 4: MAT Account: Enable the CWL Library Editor



1.22 Writing CQL Expressions Within the CQL Library Editor

The CQL Library Editor section supports the ability to add, modify or delete parameters, definitions or functions. To support this capability, various improvements were made to the CQL Library Editor section. A summary of those updates is listed below.

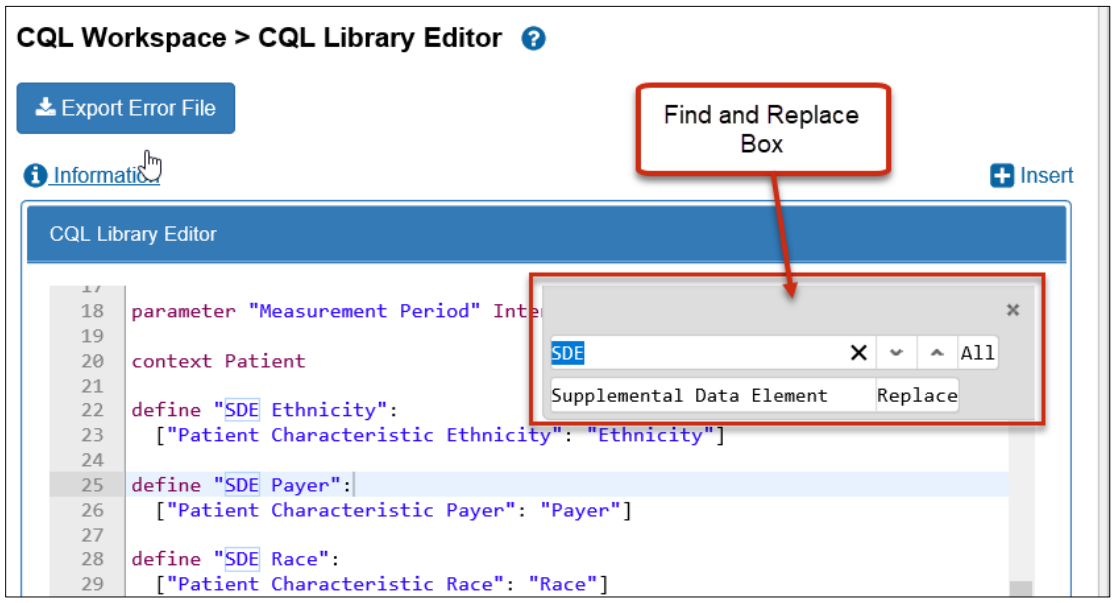
- By default, this area is “Read Only”. When not in “Read Only” mode, the CQL Library Editor supports the addition, modification and deletion of parameters, definitions or functions. Users can make CQL expressions editable within this area dependent on the state of the measure or library. For more information, see section 1.21 – MAT Account: Enable the CQL Library Editor.
- Only syntactically valid changes will be able to be saved. Validation of expressions within this section will occur based on the user clicking the Save button.
- As applicable, any successful addition, modification or deletion of a parameter, definition or function within this area will cascade to the rest of the MAT interface.
- Library, Model, Code, Code System, Value Set and Included Library statements may not be added, updated, or deleted within this section. Any users attempting to add, update, or delete this information within this section will receive a message notifying them that this information may not be modified in this area, and the edited Library, Model, Code, Code System, Value Set, or Include Library statement will be reverted back to its original state.
- When typing in the CQL Library Editor, a user can use the insert icon forms to maintain the convenience of correctly formatted items.

- An information icon is above the CQL Library Editor to remind users of the available shortcut keys in this area.
- The MAT will notify the user when the user had Birthdate or Dead codes with an incorrect data type. Upon save with errors, the MAT will successfully save and notify the user there is an incorrect value set/code datatype combination.
- The MAT will now notify the user when the expression name is not compliant due to having the same identifier as the codesystem, library alias of included libraries, or library identifier (name of the primary library).
- To align with CQL 1STU 4, the word "Population" will no longer highlight in the MAT as it is no longer supported as a keyword.

1.23 Find/Replace Functionality

Find and Replace capability is available for parameters, definitions, and functions within the CQL Library Editor. To use this capability, the CQL Library Editor user preference must be selected as this section cannot be "Read Only" mode. Using the CTRL+F shortcut key, a user can bring up the Find/Replace widget and utilize it to find and replace the items they need to.

Figure 5: Find/Replace Functionality



1.24 Disabled Functionality if Read Only

The Save and Insert icons on the CQL Library Editor will be disabled if the measure/library is in a read only state.

1.25 Indication of Disabled CQL Editors

CQL Editors will now indicate if they are in a read only state, due to being versioned, not owned by or shared with the user, or locked by another user, or, if the CQL Editor has not been enabled. The header

on the CQL Library Editor and the CQL Expression Editor will now show “(Read Only)” after the title. CQL Library Viewer will now always show “(Read Only)”.

1.26 Editable CQL Library Names

CQL Library names are now editable and must be unique. MAT will notify the user if there is a name conflict. When drafting or cloning a measure/library, the user will be taken to a screen where the CQL library name can be changed if necessary and then saved.

1.27 CQL Library Name Length

The MAT will display a warning message next to the CQL Library field notifying of potential export problems of Libraries with long CQL Library Names (greater than 200 characters).

1.28 Notification of Removal of Comments

The MAT will notify the user when it has removed an end-of-line comment in the CQL Library Editor.

1.29 Notification of Removal of Concept Declarations

The MAT will notify the user when it has removed any concept declarations in the CQL Library Editor. THE CQL-based HQMF IG prohibits the declaration and utilization of concept definitions in favor of value sets and codes.

1.30 Notification of Alias Uniqueness

The MAT will notify the user when the user selects an alias for a component measure that matches an alias already included in the measure.

1.31 Notification of Potential Library/Measure Review

The MAT will notify the user via the CQL Library Editor when an included library has errors.

1.32 Notification of Quotes Removal

The MAT will notify users when it removes added double quotes around an identifier in the area above the parameter section of the CQL Library Editor.

Expression Builder

1.33 Added Support for Relationships

A new Relationship section has been added to the Query flow within the Expression Builder. This ability is to support the formulation of more complicated queries that need the use of With or Without statements. As applicable, In-App-Help and guidance were added to this area.

1.34 Added Support for Return Statements

A new Return section has been added to the Query flow within the Expression Builder. This ability has been added for users who need to return something different than the default return of the specified source's return type. As applicable, In-App-Help and guidance were added to this area.

1.35 Made Filtering Optional Within a Query

A user can now create queries without being required to provide a filter(s).

1.36 Deletion of Partial Phrases in Current Session

While creating an expression in the Expression Builder, users can delete different portions of an expression without deleting all their work.

1.37 Filtering of Content Based on Return Type

To assist users in creating expressions, some support was added to filter various options based on an expression's or operator's return type.

1.38 Alphabetical Sort of Dropdowns

Dropdowns are now sorted in alphabetical order.

Measure Packager & Export Screens

1.39 Measure Packager Screen Display

The Measure Packager screen will now display the grouping title in the Measure Grouping section.

1.40 Measure Names on the Export Screen

The Export screen will now wrap long measure names.

1.41 Expressions in the Formatter

All expressions will be run through the CQL Formatter upon packaging.

1.42 Failed Measure Groupings

When a measure grouping fails, the screen will now revert to the last successful save.

1.43 Remove Ratio Measure Stratifications

Upon packaging, any stratifications existing ins measure groups in ratio measures are removed. This removal ensures compliance with the CQL-based HQMF IG.

1.44 Notification of Improper Stratification Return Type

The MAT has added validation for stratum within the stratification grouper to ensure their definitions have the correct return type per the measure group and patient-based indicator.

System Fixes

1.45 Spaces Within Identifiers

The MAT will no longer trim references to identifiers that contain extra spaces.

1.46 Notification of Required Security Questions Update

The MAT will notify the user when the user needs to update security questions.

1.47 Multiple Populations – Naming

On the Population Workspace and Measure Packager screens, when more than 1 population is added to the denominator exclusions, denominator exceptions, numerator exclusions, and/or measure population exclusions, the exact name will now be retained.

1.48 Translator Error Bypass

A fix was implemented that will now allow the CQL Workspace to properly load when the CQL to ELM translator offers up an error without a location attached to allow users to continue with their work.

1.49 Alias Same as Identifier

A user will now be allowed to package a measure if the measure's library contains an identifier that is the same name as an alias.

NOTE: Per the CMS CQL Style Guide, this is not best practice. However, CQL does not currently prevent this behavior. A future version of the CQL-to-ELM Translator will contain a warning to discourage identifier hiding. Refer to GitHub for more information.