CQMsolution

v4.0

User Documentation

Dynamic Health IT

"Healthcare Interoperability & Certification Solutions"

CQMsolution User Documentation

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134 S. Clark Street, New Orleans, Louisiana 70119
Office (504) 309-9103   Fax (866) 726-7584
www.DynamicHealthIT.com

Introduction

CQMsolution is a user-friendly web-browser-based application from Dynamic Health It, Inc. (DHIT) for calculating, displaying, and generating clinical quality measures. This application is certified for the 2015 Edition of the ONC Health IT Certification Program. For the latest edition (2015), CQMsolution meets the following requirements:

- 170.315(c)(1) – Clinical Quality Measures – Capture and Export **
- 170.315(c)(2) – Clinical Quality Measures – Incorporate and Calculate
- 170.315(c)(3) – Clinical Quality Measures – Reporting
- 170.315(c)(4) – Clinical Quality Measures – Filter

** For 170.315(c)(1), DHIT recommends that vendors provide this functionality in their native EHR, rather than through CQMsolution.

CQMsolution performs these core functions:

- Imports QRDA XML files for Report Calculation
- Calculates measure performance directly from patient data in a vendor database or by aggregating Category I QRDAs
- Includes Report calculation and QRDA Category III aggregate output
- Builds QRDA Category I Patient-Level output XML
- Displays report output in the browser interface, with dashboard, drilldown, and filter controls

CQMsolution's user interface is accessed via a browser-based interface, where users can report quality measure reports, view patient-level results, examine underlying data, and filter on demographic variables.

CQMsolution has the ability to run as a stand-alone application or as bolt-on software designed to attach to any EHR that uses a SQL type database. If the EHR captures patient data, CQMsolution can handle calculation and output.

We provide DLL access to certain functions, such as queuing reports and checking the progress of reports. This allows CQMsolution to integrate seamlessly into the vendor's EHR system. We also provide API access to CQMsolution to create reports including those with patient data in QRDA-I zip files.

Versions

CQMsolution aligns with the latest version of Cypress (4.0). Cypress is a testing and certification tool for electronic clinical quality measures. For Cypress v4.0, CQMsolution is certified on all 71 eCQMs for the 2019 Reporting year and all CMS eCQM versions on previous measure years dating back to 2014. Depending on the CQMsolution license in use, you will have access to v2.4, v2.6, 3.0+ and/or v4.0 measures, with or without the Dashboard and/or Drilldown functionality (as described later in this user guide).

Supported Quality Programs

The following quality program submission types are supported by CQMsolution. With the exception of ONC-certified QRDA-I and QRDA-III file outputs, each of these programs must be activated by your CQMsolution license.

Currently active:

- **ONC 2015 Edition Certified Output (Cypress 3.0, Cypress 4.0):** These file outputs are standard in CQMsolution and meet the latest edition of ONC certification (2015/Cypress 3.0). A QRDA I XML, QRDA III XML, and QRDA III PDF are available for download.
- **Hospital Quality Reporting for EHR Incentive Program (HQR EHR):** Hospitals reporting quality measures for Meaningful Use under the EHR Incentive Program will use this QRDA-I output. This program must be specifically enabled in your CQMsolution license.
- **Hospital Inpatient Quality Reporting Program (HQR IQR):** Hospitals participate in the IQR program by submitting inpatient quality of care data. A portion of this program can be met by submitting QRDA I XML for selected EH eCQMs. This program must be specifically enabled in your CQMsolution license.
- **Hospital Quality Reporting – Combined EHR and IQR (HQR EHR/IQR):** Hospitals can meet eCQM submission requirements for Meaningful Use and IQR with a single submission of QRDA-I files. This program output will be enabled if your license contains both IQR and EHR modules.
- **Joint Commission:** CQMsolution is an approved vendor product for meeting Joint Commission's ORYX accreditation eCQM requirements. Hospitals seeking to meet ORYX are required to report on eCQMs by submitting inpatient quality of care data. Measures are aligned with CMS eCQMs, but XML outputs (QRDA-I and ePop) are specific to Joint Commission.
- **Certified Community Behavioral Health Clinics (CCBHC):** CQMsolution supports measures submitted under the demonstration program for states to certify community behavioral health clinics. Measures in this program are based on HEDIS, PQRS/MIPS, and eCQM specs and have their own spreadsheet-based output.
- **MIPS/Quality Payment Program (QPP) – Individual:** The QPP program for Eligible Clinicians (EC) is part of the MIPS program and supports 64 aligned measures also used in the CMS EHR Incentive Program and a subset of non-aligned measures specific to QPP. An aggregate XML output for all applicable MIPS measures will be generated for any 'EP' or 'MIPS' report, for any user with this program enabled. This program must be specifically enabled in your CQMsolution license.
- **MIPS/Quality Payment Program (QPP) – Group:** The 64 aligned EC measures and selected non-aligned measures are also supported for group practice submission. An aggregate QRDA III XML output for all applicable QPP measures will be generated for any 'EP' or 'MIPS' report, for any user with MIPS group enabled. Group output will aggregate all clinicians under a single TIN and calculate a single MIPS QRDA-III for the group. MIPS Virtual Groups can also be supported if your stored procedure enables it.

Legacy programs:

- **Physician Quality Reporting System (PQRS) - Individual:** The PQRS program for Eligible Physicians (EP) supports 64 aligned EP measures also used in the CMS EHR Incentive Program and a subset of non-aligned measures specific to the PQRS program. An aggregate XML output for all applicable PQRS measures will be generated for any 'EP' or 'PQRS' report, for any user with this program enabled. This program must be specifically enabled in your CQMsolution license.

- **Physician Quality Reporting System (PQRS) – Group:** The 64 aligned EP measures and selected non-aligned measures are also supported for group practice submission. An aggregate QRDA III XML output for all applicable PQRS measures will be generated for any 'EP' or 'PQRS' report, for any user with PQRS group enabled. Group output will aggregate all clinicians under a single TIN and calculate a single PQRS QRDA-III for the group.

Supported Measures

The following measures are included in the software:

Clinical Quality Measures - Eligible Hospital
CMS 9, CMS 26, CMS 30, CMS 31, CMS 53, CMS 55*, CMS 60, CMS 71, CMS 72, CMS 91, CMS 100, CMS 102, CMS 104, CMS 105, CMS 107, CMS 108, CMS 109, CMS 110, CMS 113, CMS 114, CMS 171, CMS 172, CMS 185, CMS 188, CMS 190

Clinical Quality Measures - Eligible Provider
CMS 2, CMS 22, CMS 50, CMS 52, CMS 56, CMS 61, CMS 62, CMS 66, CMS 68, CMS 69, CMS 74, CMS 75, CMS 77, CMS 82, CMS 90, CMS 117, CMS 122, CMS 124, CMS 125, CMS 126, CMS 127, CMS 128, CMS 129, CMS 130, CMS 131, CMS 132, CMS 133, CMS 134, CMS 135, CMS 136, CMS 137, CMS 138, CMS 139, CMS 142, CMS 143, CMS 144, CMS 145, CMS 146, CMS 147, CMS 148, CMS 149, CMS 153, CMS 154, CMS 155, CMS 156, CMS 157, CMS 159, CMS 161, CMS 163, CMS 165, CMS 177, CMS 182, CMS 249, CMS 347, CMS 349, CMS 645

CCHBC measures
FUM, FUA, PCR-BH, SSD, SAA-BH, FUH-BH-A, FUH-BH-C, ASC

PQRS-specific measures (Legacy)
PQRS 383, PQRS 391, PQRS 431

Discontinued for IQR reporting

Discontinued CMS eCQMs for 2019 Reporting

For the 2019 reporting year, a subset of eCQMs have been discontinued for all CMS reporting. These measures will continue to be available in CMS bundles prior to 2018 and in any other applicable measure bundles:

CMS 65, CMS 123, CMS 158, CMS 164, CMS 166, CMS 167, CMS 169

Adding a Practice on Fresh Install

The CQMsolution installation process will place a shortcut to the CQMsolution site on your desktop. Upon opening the site, if you have not already configured a Practice to use for CQMsolution, the application will prompt you to complete the 'Add a Practice' form. This will enable the application to generate reports for your practice(s):
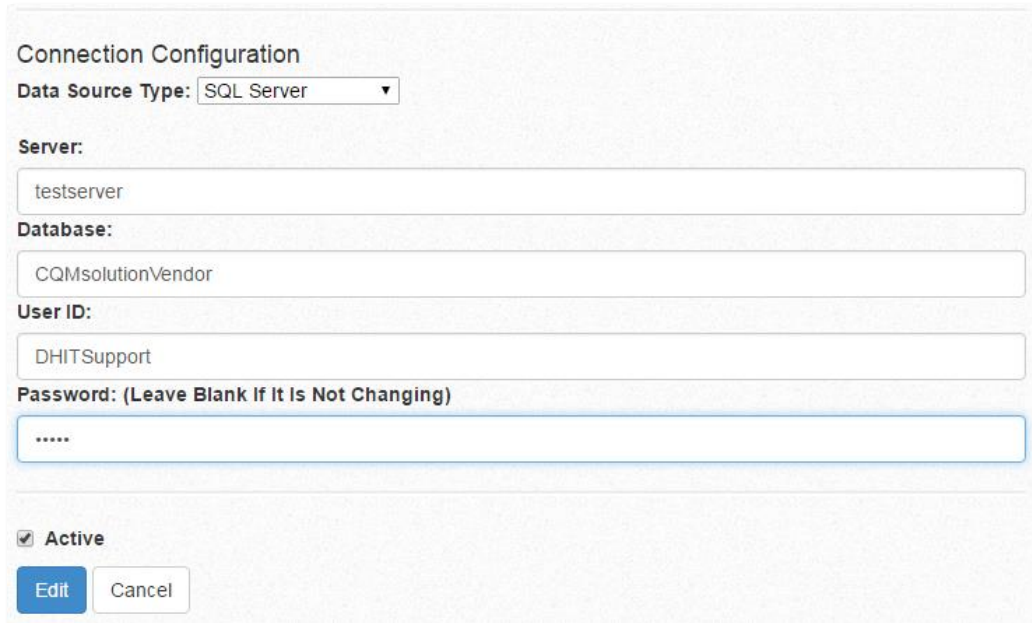

Administrators can edit the information entered here and can add additional practices. Only User Output Restriction, Practice Name, Email, and External Practice ID are required fields.

User Output Restriction limits the programs outputs available to users. **External Practice ID** is a string you can specify that CQMsolution will use when requesting data from your vendor database during report generation. More detail on Practice Setup is provided in the CQMsolution Administrative document.
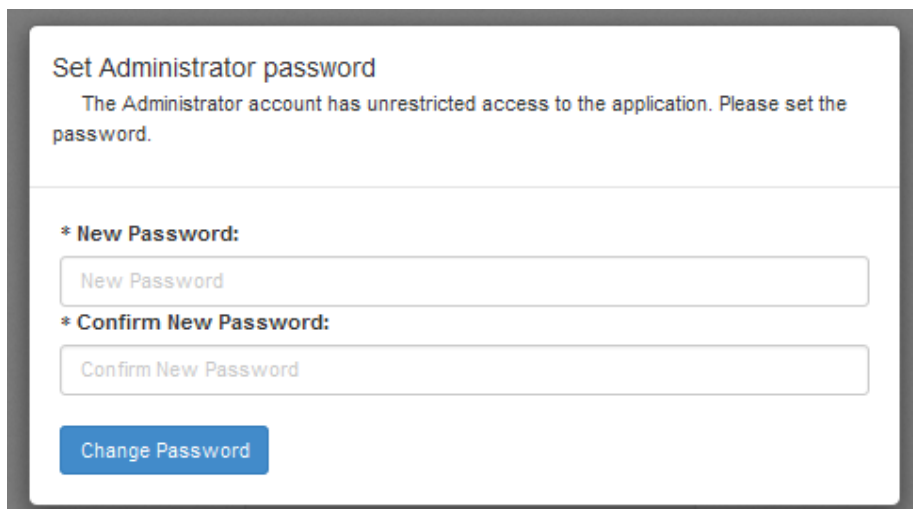
Connection Configuration specifies the connection string that CQMsolution will use when requesting patient data from the vendor system during report generation. Each practice can connect to a separate vendor database or all practices can connect to a single database.

The next screen will require you to change the administrator password. This root administrator will be given the username "Administrator" and will have access to all screens in CQMsolution. The password can be changed later.

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Login Screen

The Login screen allows you to login to the system by entering the correct login credentials and selecting a Practice:

Below the **Login** button, you will see a list of measure bundle years and programs activated by your license file. These years correspond to the CQM reporting year and indicate quality programs supported in your license. If the Security Banner setting is active, users will need to check a box and agree to a text disclaimer:

The login screen will also vary based on which of the two practice selection type settings is in use. The practice selection type is a settable option in the Configuration screen. The options are:

a. Drop down (shown below): Choose practice from a pre-populated list.
b. Text box (shown below): Allows users to enter a name or code to select the practice for which they want to login. If the practice is not found, you will see an alert that the practice is not valid.

Drop-down

Text box

If you are logging in using the Text Box practice selection method, you will enter the External Practice ID of the practice for which you want to login. Administrators for practices using this login method can consult the practice settings screen to confirm this value and should make sure all users are aware of it. If the practice is not found, the user will get a message stating the practice is invalid. Vendor Admins do not need to specify a practice for login.

Please see the CQMsolution Admin Menu Documentation for more detail.
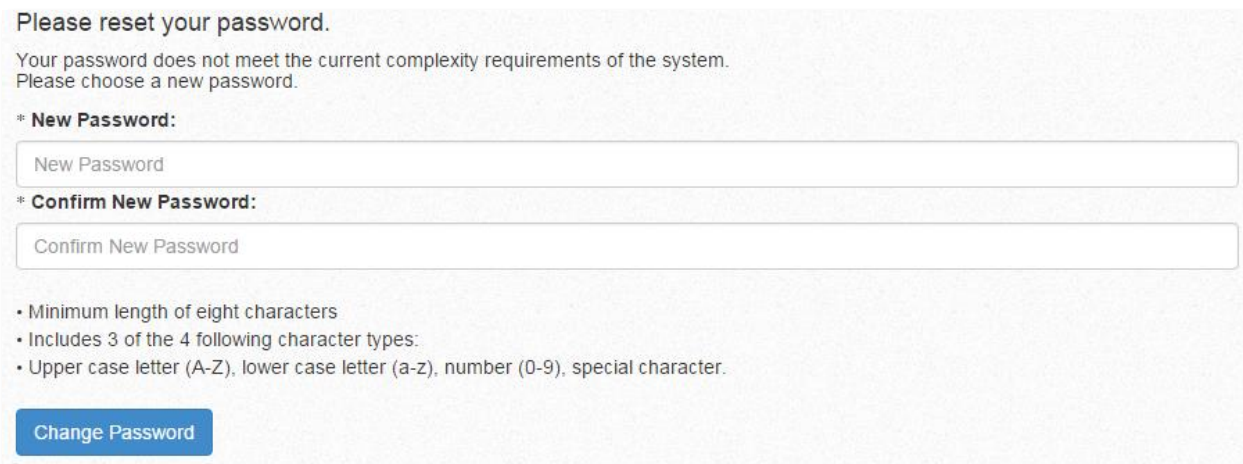
Password complexity reset

Please note that if you are using an earlier version of CQMsolution, you may be prompted to reset your password on upgrade if your user account does not meet complexity requirements:

- Minimum length of eight characters
- Includes 3 of the 4 following character types: Upper case letter (A-Z), lower case letter (a-z), number (0-9), special character.

Users whose passwords do not meet these criteria, will see the following screen when logging in to CQMsolution v2.1 or greater:

Creating a new password will enable you to login as normal.

Navigation Bar

The composition of the gray navigation bar at the top of the screen will vary by user type. Your username will appear on the far right, with a drop-down enabling you to edit account details and logout. All Entity administrators will have access to the Administration Menu, as well as any Practice Administrator (provided that the Entity Administrator has not disabled user edit capability). Clinicians will not have access to the Administration menu.

Select "Create Report" to create a new quality measure report on the *Queue a Report* screen.

If you are an administrator, you can select **Administration** for the following options: Log (See ***Administration Menu Documentation*** for more detail on each of these screens):

- **Configuration:** This screen allows you to configure all of the basic user editable settings of CQMsolution, including: upload directories, agent, single sign-on, practice selection method, active directory, security banner, and restrictions on practice-level admins.
- **Practices:** This screen allows you to add and edit Practices.
- **Users:** This screen allows you to add and edit Users.
- **Monthly reports:** Add or edit details for reports that the CQMsolution Agent will run automatically.
- **Generate QRDA1:** Download QRDA-I files from a specified database with one click. This is used primarily during ONC Certification testing.
- **Server Time:** This screen displays the current time for the server on which CQMsolution is running.

Audit log: Administrators can view a complete record of events for CQMsolution: login/logout, report run, patient information access, report view, and account changes.

About: All users can display the CQMsolution Version Number (4.0) in a pop-up overlay.

Contact: All users can view configurable contact page. The default is the Dynamic Health IT website, which displays the company phone number and email address.

Username drop-down [far right]: Selecting your username (in the example above, "*Administrator*") gives the following options:
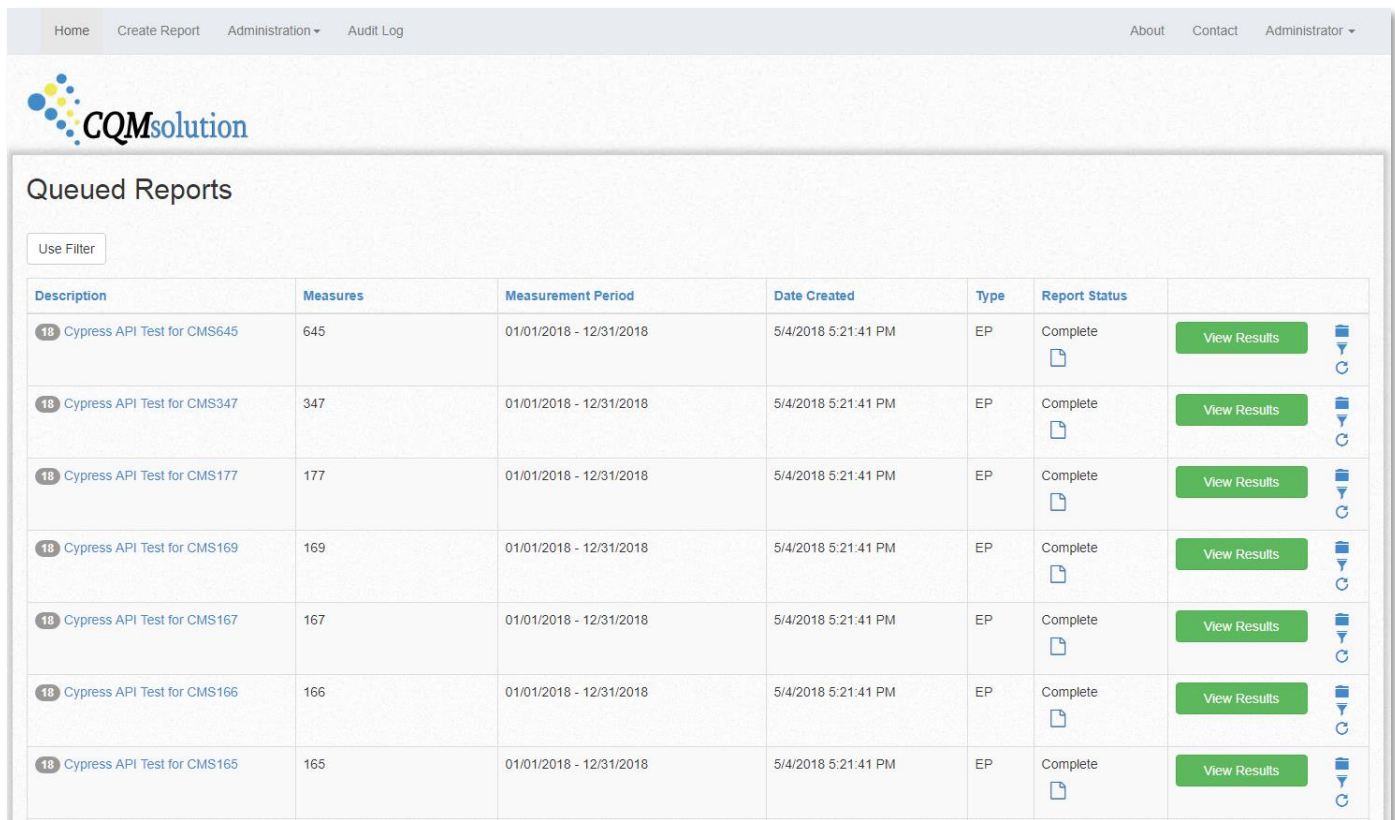
- **Edit Account:** Allows you to edit user account information for the user currently logged in.
- **Logout:** Logs you out of the system and brings you back to the Login screen.

Queued Reports/Home Screen

The **Queued Reports** screen (pictured below) is the screen that displays when you log into CQMsolution. Clicking "Home" on the top ribbon menu will return you to this screen. This screen lists Quality Measure Reports in reverse chronological order. The reports displayed on this screen will be determined by your user type. Entity Admins will see all reports run at all practices. Practice Administrators will see all reports run for users at the practice. Clinicians will see only their own reports.

Report progress will be displayed on screen with the status 'Running' and a time estimate to completion.

Headers for Queued Reports

To sort the reports by a column selection, click on the column heading. The following headers are displayed on the Queued Reports screen:

- **Description:** Clicking the report description will generate a pop-up that provides the Report ID number (which matches the QueueItem ID number in the database).
- **Measures:** All quality measures selected for the report run by CMS or MIPS number. You can click the hyperlink following the ellipses to display the full list of measures in a pop-up.
- **Measurement Period:** Start and End Dates chosen to the report.
- **Date Created:** Time Stamp (using the server time on which CQMsolution is running) of when the report was initiated

- **Type:** Corresponds to the measure bundle selected – EH, EP or MIPS (please note that CCBHC bundle measures will appear under the 'EP' type designation).
- **Report Status:** Current evaluation state of the report: Complete, Complete with Errors, Validation Error, Halted, Failed (as detailed in the following section).

All currently running or completed reports will populate the Description, Measures, Measurement Period, Date Created and Type columns. Report Status will vary by, while only Completed reports will have a 'View Results' clickthrough button.

Filtering

Clicking the button 'Use Filter' above the header row will display a toolbar that enables you to select one or multiple criteria to narrow the display of reports on the Queued Reports (Home) screen:

The filter toolbar enables you to filter on the following criteria:

- **Report ID:** Each CQMsolution report has a distinct CQMQueueItem ID, which is viewable when clicking the report description or in the header information in the report's sub-pages.
- **Description:** Free text search against arbitrary report descriptions.
- **User Name:** Free text search against User Name of user who ran the report (User Name is not displayed on Queued Reports screen, but is available as a search criterion). Note that this field will not appear if the user is logged in as a Clinician.
- **Practice Name:** Free text search against Practice Name of user who ran the report (Practice Name is not displayed on Queued Reports screen, but is available as a search criterion). Note that this field will not appear if the user is logged in as a Clinician or a Practice Admin.
- **Submitted (checkbox):** If checked, the query will only display reports marked by user(s) as 'Submitted' (if unchecked, all report statuses are shown).
- **Submission Comment:** Free text search against user-added report comments.
- **Report Status:** Dropdown that enables filtering by all possible statuses in 'Report Status' column.
- **Begin Date/End Date:** Filtering by reporting period date range.

You must click 'Apply Filter' to filter on one or multiple criteria. All criteria can be reset from the form by clicking 'Clear Filter.' In addition, the dropdown in the lower right of the toolbar's display allows 10, 25, 50, 100, or 1000 records to be viewed at a time.
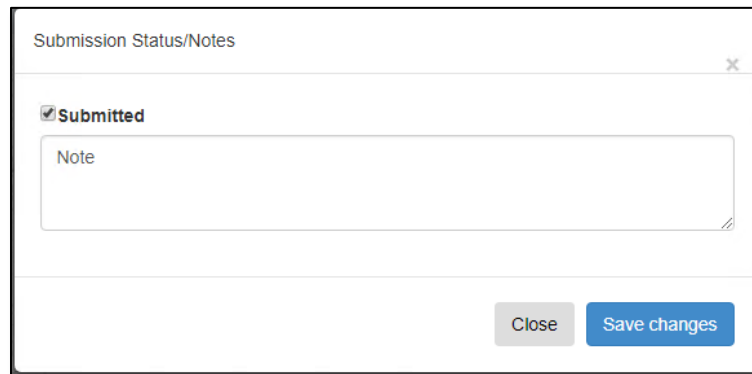
Report Status and Submission Management

Reports will fall into the following statuses (please see following sections for full explanation of each active or terminal status):

- **Waiting:** Report has been queued but has not begun execution (in most cases this status results when CQMsolution Agent is restarting, off, or the report queue is lengthy).
- **Running:** Report is actively in the process of gathering data, calculating, or rendering outputs.
- **Incomplete Statuses:**
    - *Validation Error*: This status will result if you have chosen to check off the 'Pre-calculation Data Validation' option on report run (checkbox availability is configurable by practice). Your report will be aborted prior to calculation if it has errored for at least one patient: individual patient data fails to evaluate, contain key data that is missing or invalid or submission program errors detected. The errors reported by this status will be the same as those in 'Completed: Errors' but are detected prior to any calculation, and the report run will be aborted if one or more error is found.
    - *Halted:* User has chosen to stop the report from running using Halt button or SQL command.
    - *Failed*: Report cannot evaluate any patients due to critical SQL/application error or lack of data.
    - *Completed: Warnings*: Report has completed calculation, but the data has been flagged as containing elements that may be missing or unintentional for at least one patient. An example of a warning would be vendor data that does not contain an 'Encounter' section type but is formatted correctly otherwise. A report that only contains Warnings will not be halted in pre-calculation validation.
    - *Completed: Errors*: Completed with Errors status reports the same data errors found in pre-calculation data validation but allows the report to complete any eligible patient calculation first. The report has completed calculation, but has errored for at least one patient; individual patients may have failed to evaluate, contain missing or invalid key data, or submission program errors were detected.
- ***Complete:*** Report has completed calculation, and no errors were detected.

All reports with a terminal status (i.e., those not Running or Waiting) will have a Notepad icon next to report status (⬜) which is used for Submission management. Clicking the Notepad icon allows the user to mark the report as 'Submitted' (to a Quality Measure authority or other body) and a note can be included:

All terminal reports can be marked with a note, but only 'Completed' (error-free) reports can be marked 'Submitted.' The notepad icon will be updated to reflect annotations:

- **Empty note:** No note or submission status available.
- **Populated note (no checkmark):** Contains note, but not submission status.
- **Checkmark (no note):** Report is marked submitted but contains no note [Only Completed reports].
- **Checkmark with note:** Report is marked submitted and contains note [Only Completed reports].

Report status: Running

Report progress will be displayed on screen with the status 'Running' and a time estimate to completion. For all currently running reports, there will be an option to halt the report mid-run:

Description	Measures	Measurement Period	Date Created	Type	Report Status	
Quarterly report for Test Clinician	2,22,50,52,56...50 More	01/01/2018 - 03/31/2018	5/10/2018 12:40:12 PM	EP	Running	Load Vendor Data / Halt Evaluation

Clicking the orange **Halt Evaluation** button will permanently stop the report run.

Report Status Incomplete: Halted, Failed, and Complete With Errors

Reports that run fully with no errors will appear in the Queued Reports screen with a status of 'Complete' and a **View Results** button to the far right of the row. However, some reports may be incomplete, as described under the categories listed below.

Halted reports
Reports that are stopped in the user interface or through a SQL command before a complete run will appear on the Queued Reports screen with the status 'HaltedByUser'. The Report may be re-run by the user and will start from the beginning of the execution.

Failed reports
Reports that fail due to error will appear with a 'Failed' status:

Description	Measures	Measurement Period	Date Created	Type	Report Status
DOCOF D012 missing for Admin User	2,22,50,52,56...48 More	01/01/2016 - 12/31/2016	4/11/2018 2:31:40 PM	EP	Failed

Clicking on the 'Failed' status will lead you to the Error Detail View screen detailing the specific exception that caused the report to fail.

Completed with Errors
Reports that run fully but encounter select evaluation or submission errors for patients within the report will have the status 'CompleteWithErrors'. Clicking on the 'CompleteWithErrors' status will lead you to the Error Detail View screen with a listing of specific errors encountered within the report.

18 Cypress API Test for CMS158	158	01/01/2018 - 12/31/2018	5/4/2018 5:21:40 PM	EP	Completed: Errors	View Results

Error Detail View: Data Validation Error, Completed: Errors, Warnings and Failed reports

When you click through on reports with statuses 'Validation Error', 'Completed: Errors', 'Completed: Warnings' or 'Failed', you will reach the Report Errors View, which will itemize errors per patient.

Report Id: 2429
Description: GPRO user no TIN for GPRO User
Created on: 2017-03-27 06:49 PM
Measurement Period: 2015-01-01 to 2015-12-31
show more...

Patient Id: 03d189aa-fcc6-45b5-b60c-5af0d4b7e48d_1
Exception Message:
No TIN available for PracticeId : 10

Validation Errors and 'Completed' Errors result from an identical list of data-related error checking. Errors captured in these statuses are known to prevent successful submission to quality measure programs and full reporting of all patients or incomplete results. The 'Validation Errors' status is triggered when the user selects pre-calculation validation on report run: in this case, the report will abort prior to any calculation. 'Completed: Errors' will result when the user has not selected any pre-validation but allows the report to complete as many patient calculations as possible.

Failed reports and Warnings may result under either data validation scenario – regardless of pre-calculation validation – and represent a critical data loading issue or other unhandled exception. When a report fails, no calculation will be available. When Warnings are found, they will not be reported during pre-validation unless Errors are also discovered.

*Please see **Appendix B** for a full inventory of error statuses.*

View Results

Clicking the **View Results** button will bring up the dashboard view for that report, with links to report details and summary views (see **page 30** for a guide to this screen).

Archive, Filter, and Rerun

The **Archive** 🗑 and **Rerun** ↻ buttons will appear next to all reports, while the **Filter** button ▼ will be available on all reports for the 2015 reporting year or later.

Clicking on **Archive** will remove the report item from the Queue Report (Home) screen and delete the associated database items. Local zip files stored on the hard drive will still be available.
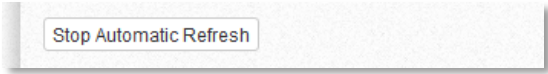
Rerun allows you to generate a report with identical parameters to the one which you are re-running. This will create a new QueueItem and report on the Home screen. If your staged data has changed, report output may vary. If you have configured CQMsolution to delete reports with identical parameters, the original report will not be preserved.

Clicking the **Filter** button will lead you to a screen that provides options for filtering the data contained in the report (see **page 43** for details on filtering).

NOTE: If the setting "Store only the most recent output of duplicate reports" is active in Configuration, then for any reports generated with the same parameters (measures, measure year, time frame, providers), only the most recent report will appear in this list.

Automatic refresh

Below the list of reports is the **Automatic Refresh** button which toggles on and off whether the Queued Reports screen will automatically refresh with new report entries:

If Automatic Refresh is active, the Queued Reports screen will refresh every second.

Creating a Report

The *Queue a Report* screen opens when you select the **Create Report** menu button. This screen allows you to select the users and measures to report on and set the parameters of the report (report description, begin date, end date, type, update year).

Report sources

In the user interface, there are three sources for report runs:

- **Standard zip report**: Upload QRDA-I files via zip.
- **Report from stored procedure**: CQMsolution will pull in data from the vendor database if 'Use Zip Folder' is not checked. The stored procedure method may or may not make use of a SQL staging table structure, as opposed to taking in data directly from your main database (see **page 43** for more detail). If you have not configured a custom stored procedure, then CQMsolution will use the default stored procedure in the vendor DB (spGetCQMDataForReport).
- **Compound report from zip**: For certification only, checking 'Use Zip Folder' and uploading a multi-measure zip with Cypress test data will enable CQMsolution to run separate reports for each measure.

  Each report in the compound run will be signified by a gray numeral next to the description: 10 (Dashboard and Drilldown screens are not available with Compound Reports).

Reports may also be generated by API, but these will not use the Queue Report user interface screen.

Left sidebar: Report Details

The **Description** field allows you to enter a name for the Report.

The **Begin Date** and **End Date** fields permit you to set a time frame for the Report (Measurement Period). The default is the first and last day of the previous calendar year. The dates selected are inclusive in the report.

After selecting a begin date, the **Add** button lets you quickly select a period to add to the Begin date (3, 6, 9 or 12 months):

The **CQM Update** years correspond to the bundles of measures you are reporting against. CMS eCQMs and other programs general are bundled by year, with revisions released annually.

Depending on your product license, you may have one or more of the following available:

- **2014:** corresponds to the version of CMS eCQMs released in 2013 (for the 2014 Reporting Year) and Cypress version 2.4. The version of Cypress has sunset and cannot be used for reporting (only attestation).
- **2015:** corresponds to the version of CMS eCQMs released in 2014 (for the 2015 Reporting Year) and Cypress 2.6.1 version. The version of Cypress has sunset and cannot be used for reporting (only attestation).
- **2016:** corresponds to the version of CMS eCQMs released in 2015 (for the 2016 Reporting Year) and Cypress 3.0.
- **2017:** corresponds to the version of CMS eCQMs released in 2016 (for the 2017 Reporting Year) and Cypress 3.1.
- **2018:** corresponds to the version of CMS eCQMs released in 2017 (for the 2018 Reporting Year) and the Cypress 3.2.
- **2019:** corresponds to the version of CMS eCQMs released in 2018 (for the 2019 Reporting Year) and the current Cypress 4.0 version.
- **PQRS_2015:** corresponds to the 2015 reporting year of PQRS measures – PQRS 383, PQRS 391.
- **PQRS_2017:** corresponds to the 2015 reporting year of PQRS measures –PQRS 431 only.
- **CCBHC_2017:** corresponds to the 2017 implementation of CCBHC program measures.

Please note that CQMsolution can be configured to produce a soft warning, if you select a CQM Update Year (report bundle) that does not match the Reporting Period. For example, you may have chosen CQM Update Year '2019' for a report with start and end dates in 2018. This will pop up on report run if your Reporting Period and CQM Update Year are out of alignment (*please see CQMsolution Admin documentation for more information*).

If you check the **Use Zip Folder** box, a 'Choose File' dialog box appears, and you can browse to a zip folder containing QRDA 1 XML files. CQMsolution will then perform measure calculations using patient data imported from these files. If you do not check the 'Use Zip Folder' checkbox, patient data will originate from the vendor system. In this case, CQMsolution will request the data using a stored procedure via the connection string specified in the practice configuration. The stored procedure includes five parameters –Type (EH or EP), Begin Date, End Date, Practice Id, and Provider NPI. Entity Administrators cam disable the 'Use Zip Folder' checkbox on the Configuration Screen.
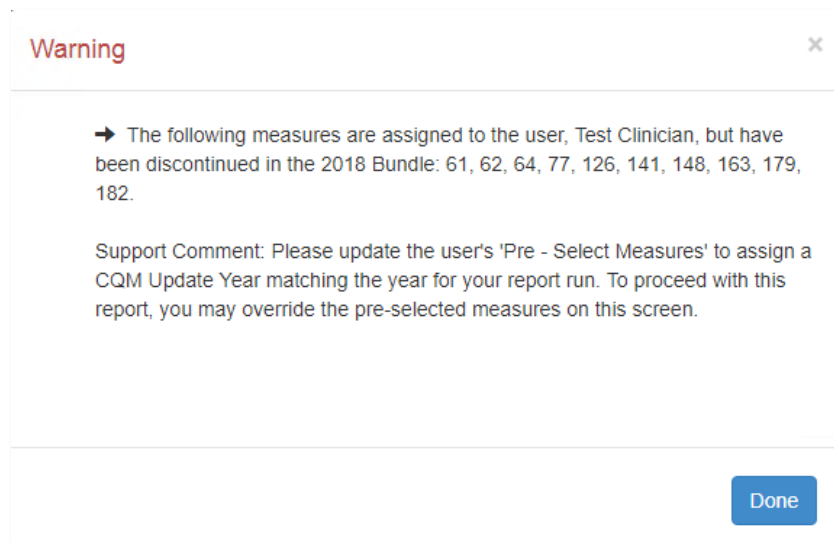
The **Data Validation (Pre-Calculation Data Validation)** checkbox is configured to display by practice. If available and checked off for your report run, data validation errors will be captured prior to any calculation and the report run will be aborted if any error is detected. Selecting pre-calculation validation allows quicker, upfront detection of errors and is recommended during the troubleshooting phase of implementation. If the checkbox is not available or not selected, data validation errors will be detected and reported after calculation and will not cause report to stop if at least a portion of patients in your data are able to be evaluated for calculation.

Select Provider

Your user type will determine the contents of the 'Select Provider' menu. If you are a clinician, you will be able to run a report for yourself only. If you are practice administrator, you will be able to select and run a report on any and all users in your practice. If you are a system-wide administrator, you will have the option to run a report for any and all users within a multi-practice entity.

The "pre-selected measures" measures assigned to each user will appear in parentheses. These are the measures that have been assigned to the user by an administrator through the Administration Menu (under "Users") or through 'Edit Account' by the user themselves if the user is an admin. By default, users will run reports using the measures that have been pre-selected.

If the selected provider has pre-selected measures that are not included in the CQM Update Year selected on the Create Report screen, an error will be displayed upon clicking the Queue Report button and the report will not be queued:
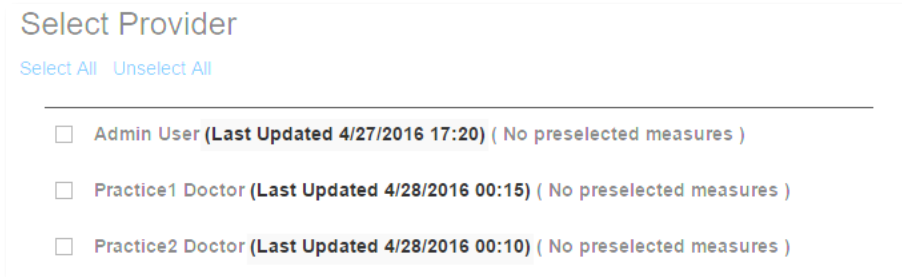
Warning

➜ The following measures are assigned to the user, Test Clinician, but have been discontinued in the 2018 Bundle: 61, 62, 64, 77, 126, 141, 148, 163, 179, 182.

Support Comment: Please update the user's 'Pre - Select Measures' to assign a CQM Update Year matching the year for your report run. To proceed with this report, you may override the pre-selected measures on this screen.

Done

The user may choose to correct the pre-selected measures in the provider's configuration and then try queueing the report again, or they may override the pre-selected measures and proceed *(see Select Measures section below)*.

Queuing a report for multiple providers will generate multiple reports – one for each provider selected. If the providers default pre-selected measures are not overridden, each report will be calculated for that provider's individual pre-selected measures.

CQMsolution provides the ability to display the **Last Updated** date and time for vendor data (per provider). This is useful for vendors using a staging database as a data source for CQMsolution.

This feature is enabled by adding a stored procedure to the vendor database that returns the last updated date. This can be accomplished by adding a column to the staging table that populates itself with a default value for the date time at which the data is inserted.

Please see UpdateDateTime stored procedure specifications for more information.

Select Measures

You may not have any pre-selected measures, or you may want to run a report on different measures than those assigned. In either case, you can select the "Override all provider pre-selected measures" option in red. This will bring up a table of measures for your report from which you can choose individually. Measures selected via 'Override' will replace preselected provider measures for all selected providers:

To select a measure for a report, click the checkbox to the left of the measure. A single measure or multiple measures can be selected for a report. To choose all measures listed for the report, click "*Select All*" under *Select Measures*; to remove all checked measures, click "Unselect All". The "Search" field, to the upper right of the list of CQMs, allows you to search for a specific measure. The list of measures automatically populates all corresponding results as you type.

In addition to a Measure Title, measures will have CMS, National Quality Forum (NQF), MIPS/QPP, and/or Joint Commission identifiers, as applicable. These numbers can be useful in selecting measures that meet desired program outputs.

Measure Type

'Type' choices are Eligible Hospital or Eligible Professional and will only be chosen if overriding pre-selected measures. Report type will determine the measures you can select in the override menu and, in addition to license and user preferences, will also determine the program-specific outputs generated by the report. Specific quality measure program outputs are divided as follows:

- **EH:** Joint Commission, HQR-EHR, HQR-IQR
- **EP[1]:** MIPS Individual, MIPS Group, CCBHC, PQRS Individual, PQRS Group

Running the report

To run a report, select the appropriate users and measures and click *"Queue Report"* at the bottom left of the screen. This returns you to the *Queued Reports* screen.

While it is processing, the report's status will appear as 'Running.' You can stop the report while in progress by clicking the orange **Halt Evaluation** button:

Description	CMS Measures	Measurement Period	Date Created	Type	Status	
Example - Cypress2.4 EH	9,26,30,31,32...24 More	01/01/2012 - 12/31/2012	3/16/2015 3:46:42 PM	EH	Running	Evaluating Patients Halt Evaluation

Once the report status is 'Complete', you can click **View Results** to see the report dashboard, summary, and detail. The blue **Archive** button 🗑 will delete the report and its data. Note: this will not archive the QRDA Cat 1 and Cat 3 files stored on the hard disk.

CQMsolution creates a number of output files during its measure calculation, as detailed in the following section.

NOTE: IIS will need full permission to the path `C:\ProgramData\CQMsolution` (or whichever file path is set in configuration) in order to successfully display output files.

---

[1] 'EP' is referred to as 'EC' within the context of the MIPS Quality Payment Program (QPP)

Report Results and Outputs

Once CQMsolution has calculated the numerators, denominators, etc., for all of the measures, it outputs the results to the Dashboard, Drilldown, Detail, and Summary screens, as well as to applicable QRDA I and QRDA III outputs and a QRDA III XML file which is viewable in the GUI.

NOTE: Dashboard and Drilldown capability is an optional enhancement to CQMsolution and may not be available in your installation.

Outputs by program

The type of report output for QRDA I and QRDA III files will be determined by your CQMsolution license, user preferences, and the report type.

The following program outputs are available:
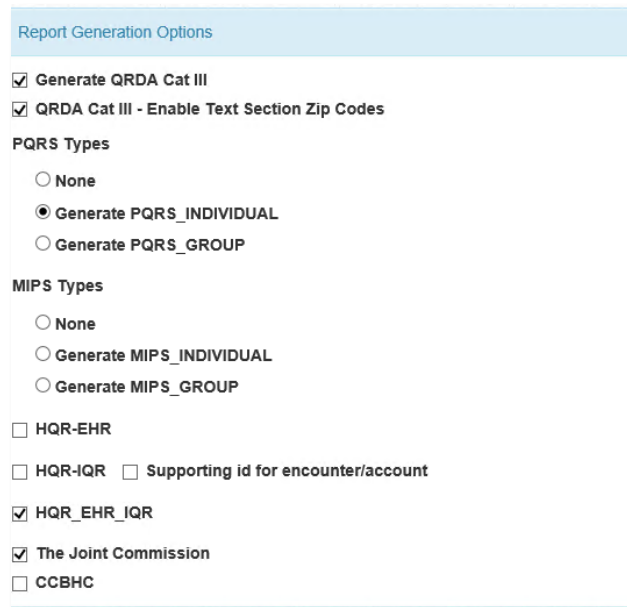
- **QRDA I and QRDA III (Cypress 3.0):** These outputs are standard in CQMsolution and meet the latest edition of ONC certification (2015/Cypress 3.0). A QRDA III PDF is also available for download.
- **QRDA I HQR EHR:** This program must be specifically enabled in your CQMsolution license. A patient-level XML file for the Hospital Quality Reporting program for MU (EHR Incentive Program) will be generated for any 'EH' report and any user with this program enabled.
- **QRDA I HQR IQR:** This program must be specifically enabled in your CQMsolution license. A patient-level XML file for Hospital Inpatient Quality Reporting (IQR) will be generated for any 'EH' report and any user with this program enabled.
- **QRDA I HQR_EHR_IQR:** This output need not be specifically selected in your license, but requires both HQR EHR and HQR IQR outputs. XML format is largely the same, but program name will be 'HQR_EH_IQR' to reflect dual submission.
- **QRDA III MIPS (Group and Individual):** Group and Individual outputs for the MIPS program must be specifically enabled in your CQMsolution license. The set of 64 aligned MIPS measures may be active and/or a subset of non-aligned measures specific to the MIPS program. An aggregate XML output for all applicable MIPS measures will be generated for any 'EP' or 'MIPS' report, for any user with this program enabled.
- **QRDA-I and ePop for Joint Commission:** Joint Commission Outputs must be specifically enabled in your CQMsolution license. QRDA-I patient level files and aggregate ePop output will be generated for all active Joint Commission measures (a subset of the hospital eCQM set).
- **CCBHC:** Must be specifically enabled in the license. A spreadsheet-based output will be available for any CCBHC bundle measures selected and is not generated until download request from the Report Detail Screen.
- **QRDA III PQRS (Group and Individual):** Legacy program displaced by MIPS outputs for 2017 reporting.

To determine the output on a given report, the following three considerations are made in the application:

1. **Is the program available in the CQMsolution license?** HQR EHR, HQR IQR, Joint Commission, MIPS, and/or CCBHC must be activated by CQMsolution's XML license. If the program is not specifically licensed, it cannot be assigned to a user, and the output will not be generated.

2. **Is the program assigned to the user?** For each program that is active in the license, a checkbox will appear on the user edit screen (see below). If your practice has a "User Output Restriction," the programs available to users will be further limited by type (Ambulatory Individual, Ambulatory Group, or Inpatient). QRDA I and QRDA III output consistent with the latest Cypress validation will be generated by default for all users (only QRDA III can be turned off).

3. **What type of report is being run?** If overriding a user's pre-selected measures, report output will be further limited by report type to ensure only relevant XML files are generated. (NOTE: This does not apply to CCBHC bundle measures)

For EP reports: Only QRDA I, QRDA III, and MIPS outputs are possible (PQRS outputs are deprecated for 2017 reporting onward).
For EH reports: Only QRDA I, QRDA III, HQR EHR, and HQR IQR outputs are possible.

Folder structure for QRDA I output

Each report you run will have a folder in the default path `C:\ProgramData\CQMsolution\Data\Evaluator` where file outputs will be placed:
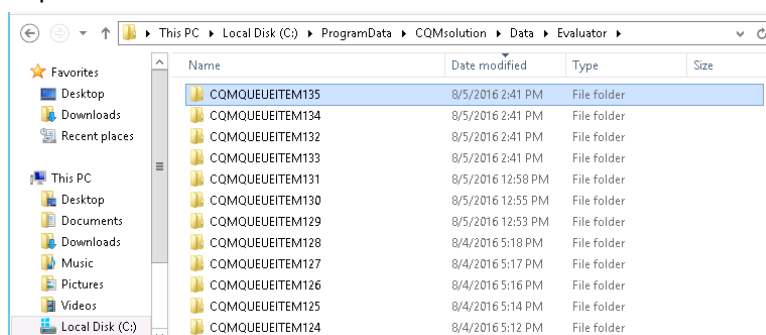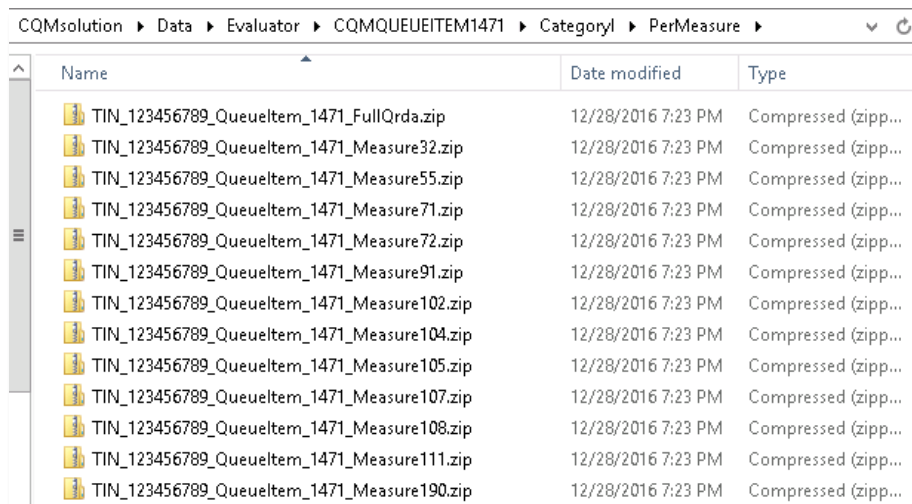
Folders for each report will be named according to QueueItem number, which can be compared against the database and against any report on the Queue a Report screen (by clicking on report description). By default, the Queue Item folder contains sub-folders for QRDA Category I and QRDA Category III. There may also be sub-folders for HQR_EHR and HQR_IQR, depending on your license, user, and report type.

For each patient, CQMsolution generates a combined QRDA-I for each of the measures for which the patient meets the Initial Patient Population. These files are placed in the Category I sub-folder. When all patients are finished processing, CQMsolution zips up the contents of each subfolder and places it in the root Category I output folder(s) within the queue item folder.

The data elements (encounters, diagnoses, etc.) included in each of those files may be different, as only the data required to meet that particular measure is output to the QRDA-I file. For example: a patient who meets the IPP of two measures will have a QRDA-I file for each of those measures.

Each of these QRDA-I files will be placed in a Category I subfolder, by program. This folder will contain a zip with the following contents:

- **Full QRDA zip file:** Contains a single zip per patient for all measures in the report.
- **Per-measure zip files:** Contains a separate per-patient zip for each measure in the report.

For Hospital Quality Reporting programs (EHR and IQR), a new zip file will be created once a folder exceeds 15,000 patients. This limit is in place to stay within maximum file upload limitations for submission.

Naming QRDA I zips and XML files

In order to facilitate tracking and file submission, zip folders for QRDA I output are named according to the following convention:

TIN_TIN#_QueueItem_QueueItem#_QRDAIType_Part#

TIN# is the Tax ID number for the practice found in the report.

'QRDAType' corresponds to either the measure number (if per-measure) or 'FullQRDA' if QRDA-I is for all measures in the report.

Part#: For Hospital Quality Reporting programs (EHR and IQR), zip files role over after 15,000 patients and a "Part#" will be appended indicating the number of zips for that measure or Full QRDA.
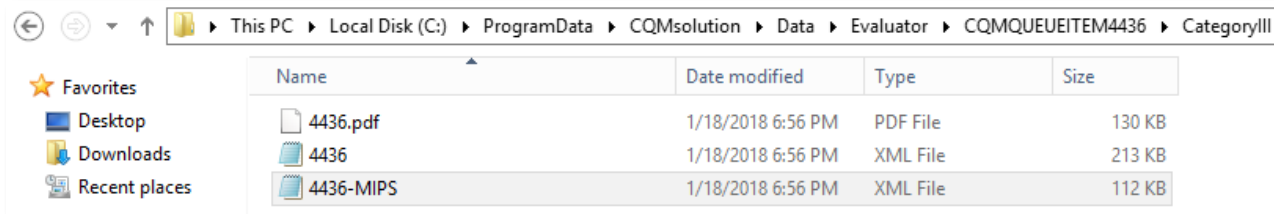
QRDA-I XML files found in these zip folders are named according to a similar convention:

TIN_TIN#_QueueItem#_MedicalRecordNumber
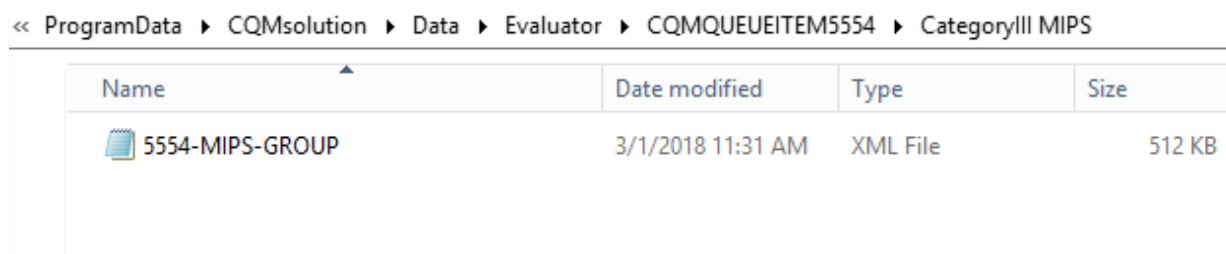
Folder structure for QRDA III output

Similarly, the QRDA-III file (both XML and PDF) will end up in the Category III output folder:

When QRDA Category III XML files are generated for submission to the CMS Quality Payment Program (MIPS), there will be a separate folder for either Individual or Group output, depending on Practice Type and User selections. The MIPS file will appear under the 'CategoryIII MIPS' folder:
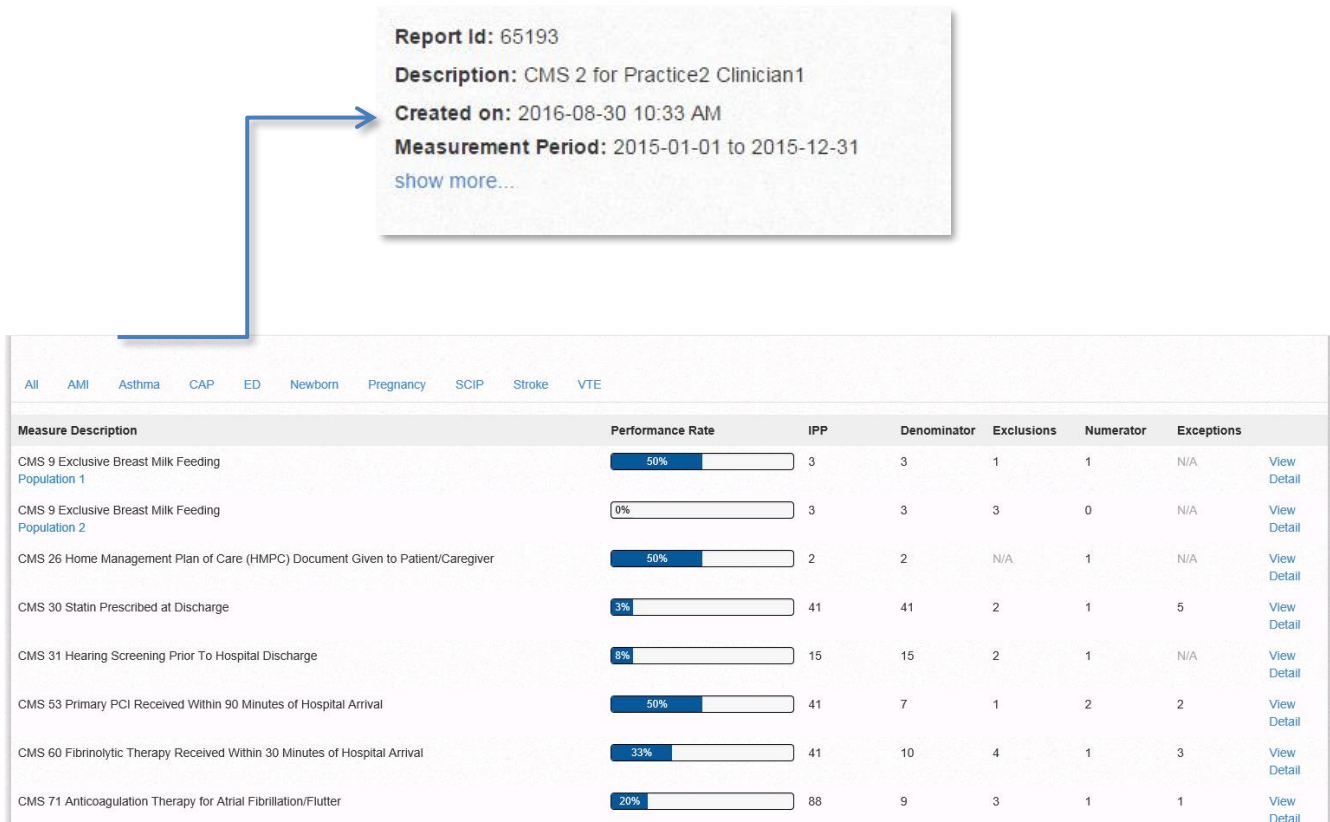

'-MIPS-GROUP' or 'MIPS-Individual' will be appended to the file name.

Dashboard: Performance rate and counts

Clicking 'View Results' on the Queued Reports (Home) screen will bring up the Dashboard view for that report:

Measure Category Tabs
Each measure in your report corresponds to a broad category used to group measures by discipline or topic area. You can click on the tabs at the top of the dashboard to display only measures in that category. *Please see Appendix A for more information on measure categories.*

Each report contains a report header (see above). Basic report details listed here:

- Report ID: The QueueItem ID used to reference the report throughout the application.
- Description: Title of report as provided on Queue a Report screen.
- Created on: Timestamp for when the report was run.
- Measurement period: Start and end point for patient data, as set on the Queue A Report screen.

Clicking 'show more…' at the bottom of the header will reveal additional information about the measure bundle, provider, user, and data.

The Dashboard contains entries for each measure included the report, as indicated by a descriptive title and measure number on the far left. If a measure has more than one numerator, each numerator will appear as a separate entry.

Each measure will display a 'Performance Rate' bar, which indicates the percentage of patients who meet the measure after exclusions and exceptions (i.e. numerator divided by denominator after subtracting the exclusions and exceptions).

There will also be counts for Initial Patient Population, Denominator, Exclusions, Numerator, and Exceptions:

- **Initial Patient Population (IPP):** All patients (or episodes of care) that were considered for inclusion in the measure.
- **Denominator:** A subset of the IPP that results prior to Exclusions and Exceptions. The denominator is the population <u>eligible for the measure</u> and also the upper limit for the numerator when considering measure performance rate.
- **Exclusions:** A subset of the Denominator which <u>are not</u> considered for inclusion in the Numerator.
- **Exceptions:** A subset of the Denominator which <u>are</u> considered for Numerator membership after Exclusions. Patients or episodes from this smaller subset that are not ultimately included in the numerator are Exceptions.
- **Numerator:** A subset of the Denominator after all criteria (processes or outcomes expected) for each patient, procedure, or other unit of measurement, are applied.
- **Data Completeness Met with Performance Not Met:** Only applicable in measure logic for some PQRS, CCBHC, and MIPS measures. Evaluated before numerator for patient or episode cases in which data required by the measure was recorded successfully but cases did not meet performance requirement. Excluded/included according to specific measure logic.

When a measure does not have any Exclusions or Exceptions, the value will appear as N/A.

Dashboard: View Detail

Each measure has patient-level drill down detail. Click on 'View Detail' for that measure to bring up the patient detail screen:

The 'Patient List' screen lists all the patients in your practice or entity during the reporting period, with their date of birth and account number. On the far right, a green check mark will indicate whether they met the IPP, Denominator, Exclusion, Numerator, and/or Exceptions for the measure on which you are drilling down.

Dashboard: Episode Debugging

If enabled by your product license, a configuration is shown for entity admins in Administration > Configuration called Enable Episode Debugging. This will toggle the ability to view episode counts for each population for episode-based measures. A button will be shown on the drilldown/patient list page that toggles the view between check marks and episode counts. When the plus sign next to the right of the boxes is clicked, a popup will be displayed showing the account numbers corresponding to the visit(s) that met each population.

Checks view enabled:

Counts view enabled:

Dashboard: Sort and Search

Clicking on any checkbox – whether marked with a green checkmark or not – will take you to a debug screen showing how the patient was evaluated for each component of the measure (IPP, Den, Excl, Num, and Excp). You can also search by Last Name, First Name, and/or Patient ID to show a subset of the patient list. Patient ID will search the MRN in the underlying patient data, not the Client ID as shown on the screen.

Please note that the search and sort features are a way to view existing report data that has already run in the user interface. It will not affect the report's QRDA output. This is done in the Filter Screen.

Dashboard: Patient-level debug and drilldown screen

Clicking on any checkbox from the "Dashboard: View Detail" screen will bring up the measure debug logic for that patient. This screen details each step in the logic by which the patient was considered for the measure. IPP, Denominator, Exclusions, Exceptions, and Numerator are all drilled-down under separate headings. Beneath these headings, the logic tree will appear, showing a blue check mark for each condition met and red 'X' for each condition not met.

Initial Patient Population logic will appear for all patients, while other components will only appear as applicable. For example, a patient who does not meet the Initial Patient Population will not be considered for the Denominator, according to the logic by which CQMs are calculated.

Drilling down on data from the patient debug screen

For any node of the measure that the patient meets (as indicated by a blue checkmark ✔), a hyperlink will be available (as shown in the screenshot, above). Clicking on this hyperlink will allow you to drill down on the underlying data and view the data elements – code , code system, and timestamp – relevant to the patient for that logic node.

Clicking on the hyperlink for the logic node will display a pop-up on screen with this information:
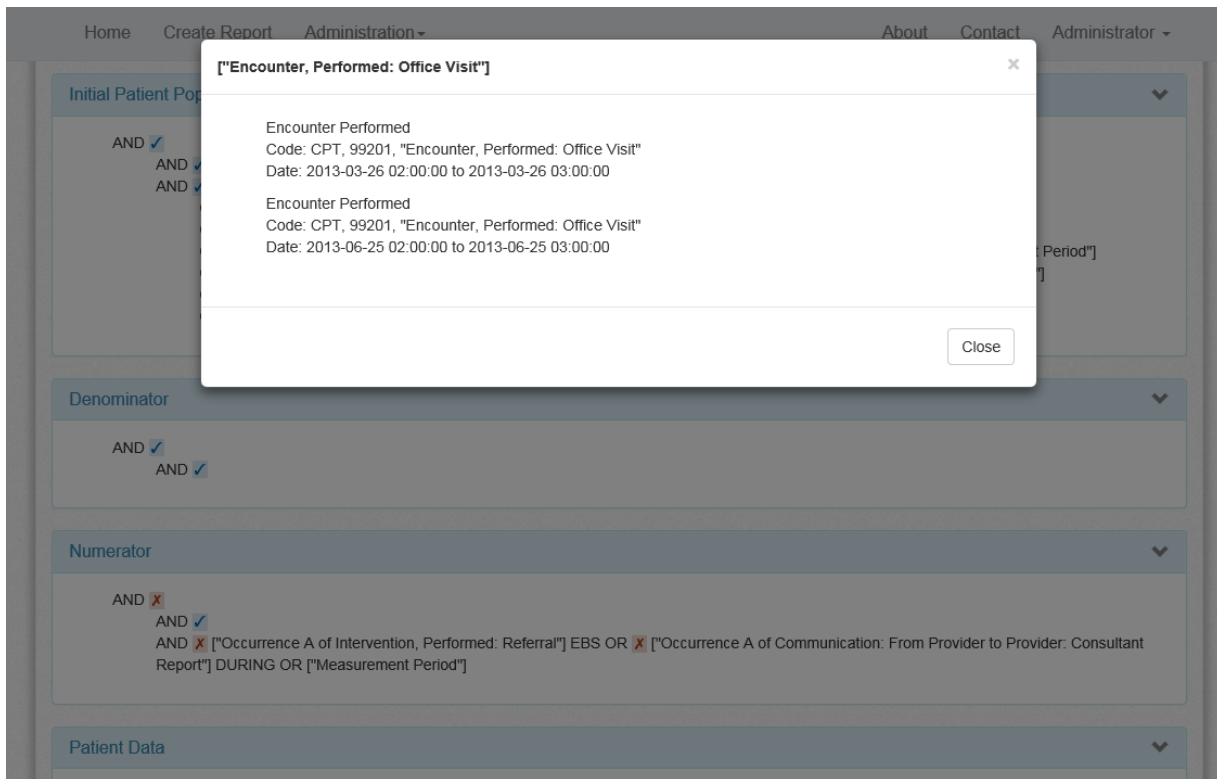
Note: To enhance clarity of report results, CQL functions that do not directly contribute to population criteria evaluation are hidden from the patient debug screen.

Summary

If the report includes more than one measure, the list of measures will appear under the *Index* heading on the Detail screen. You can view information on each measure by selecting the measure's link.

Detail (QRDA) Screen

On this screen, you can view certified QRDA-III aggregate output, download report outputs, and, if applicable, send files via API. You will see a dropdown used for downloading and, if configured, another dropdown that will enable sending via API.

If you have chosen to generate a default, certified QRDA III for the report, you will also see the human readable version on screen. This QRDA III is intended for Cypress submission and basic troubleshooting and does not meet specific quality program submission requirement. Separate MIPS QRDA III outputs will be used for submission.

Detail Screen: Downloading Outputs

QRDA-I and QRDA-III outputs can be downloaded directly from the Detail screen. This screen will render the following outputs, some of which will be contingent on quality programs active in your CQMsolution license and for your specific user:

- **QRDA-I:** Patient-level XML file for EP or EH measures in CMS EHR Incentive; available per-measure and for entire report run.
- **QRDA-I HQR EHR**: Patient-level XML file specific to Hospital Quality Reporting for MU (EHR Incentive Program); XMLs available per-measure and for all measures report run.
- **QRDA-I HQR IQR**: Patient-level XML file specific to Hospital Inpatient Quality Reporting (IQR); XMLs available per-measure and for all measures report run.
- **QRDA-III:** Aggregate XML file for EP or EH measures in CMS EHR Incentive Program.
- **QRDA III MIPS:** Aggregate XML output for Quality Payment Program under MIPS (group and individual outputs are available but selected as either/or in user settings).
- **QRDA-III PDF:** Rendered based on updated style sheet.
- **Joint Commission:** Download Joint Commission QRDA-I and aggregate ePop XML.

*Please see **page 26** for more detail on how report output is generated based on license, user, and report type.*
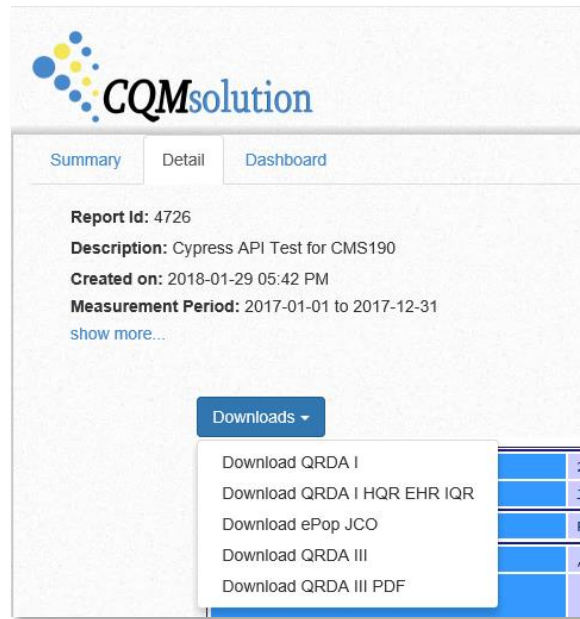
Notes:
- PDFs will not be generated retroactively for reports run under older versions of CQMsolution, but can be generated on-the-fly via the QRDA-III screen for that report.
- If implementing the CQMsolution File Push API, you may see the 'Submit to DHIT' button on this screen (See below).

Detail Screen: Sending via API

CQMsolution includes support for pushing program submission files from the CQMsolution User Interface to a remote server monitored by Dynamic Health IT. It used by clients for whom DHIT is the designated data submission vendor:
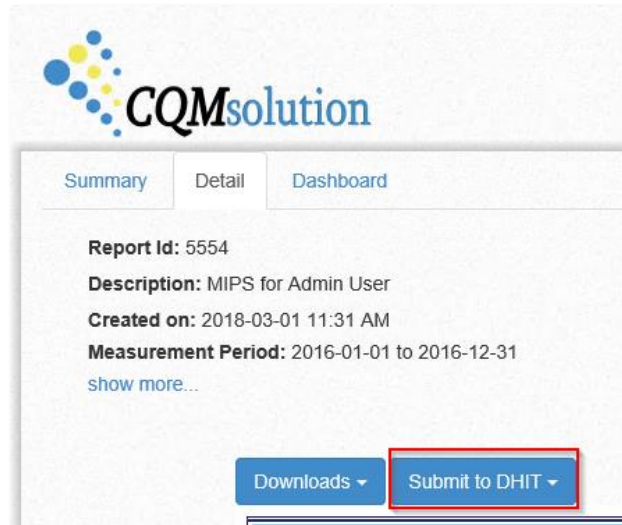
The file push consists of an HTTPS POST API and background SMTP email process for submission alerts. Entity Administrators of your CQMsolution instance can configure the API endpoint and SMTP settings to enable all users to submit encrypted report files successfully to DHIT via the API.

The File Push API is contained within the CQMsolution install package and does not require a separate deployment, but does require activation in the CQMsolution license and a process of configuration.
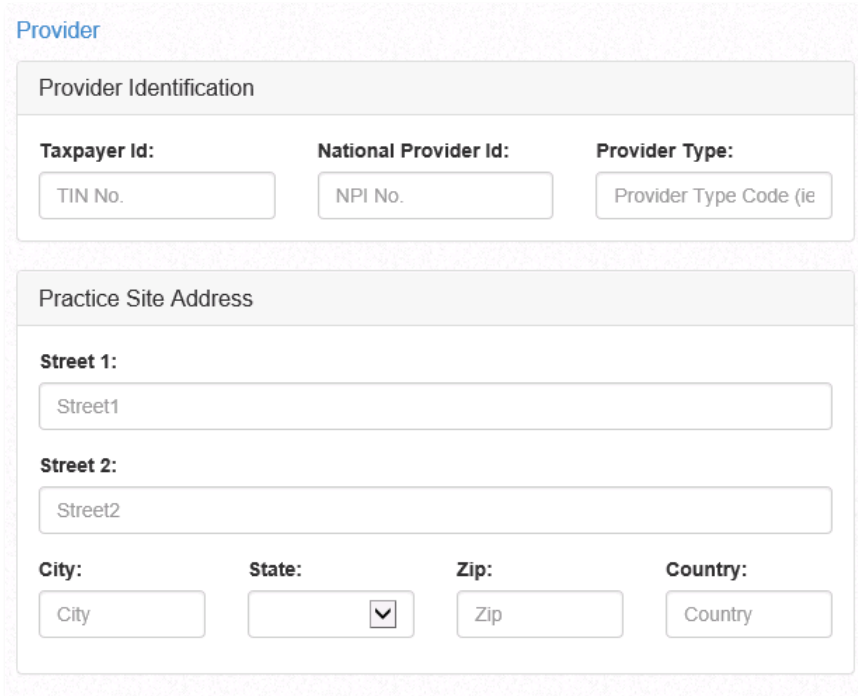
*Please see **File Push API documentation** for more information on implementation.*

Filtering report data

If you have measure **(c)(4) – Filter** active in your version of CQMsolution, you have the option to filter CQM report data by a variety of parameters. After running a quality measure report, the CQM data loaded into the database can be filtered by clicking the filter icon ▼ next to a report on the Queued Reports (Home) screen:

Provider

If you are passing these values to CQMsolution in your quality measure data, a filtered report can be generated comprised of only data for providers matching the values in these fields.

- **Tax ID** (TIN): Taxpayer Identification Number is a nine-digit identifier used by IRS for tax purposes and group quality reporting.
- **National Provider Id** (NPI): The Centers for Medicare & Medicaid Services (CMS) assigns 10-digit unique identifiers which can be captured in the CQMsolution database. NPI can also be passed in stored procedure to filter data at the report level (as opposed to post-report filtering).
- **Provider Type:** Will look into DocumentationOf section of XML or field in vendor database used by stored procedure that defines provider specialty.
- **Practice Site Address:** Each element of the provider (AuthorOf) address can be used to filter CQM data.

Patient

Basic patient data used by CQM logic is captured and used for calculation by the CQMsolution database for most measures:

- **Demographics - Gender:** Will use gender as passed to CQMsolution in the report that you are filtering.
- **Demographics – Race/ethnicity:** Uses values in the CDC Race and Ethnicity Codes (OID 2.16.840.1.113883.6.238).
- **Age:** Can specify an age range or age-cutoff for filtered data. Will use the DOB for the patient as passed to CQMsolution in the report that you are filtering.
- **Problem/Diagnosis:** Requires at least a code to run filter. Code-system name allows drop-down to define a global code system such as RXNORM, SNOMED, etc.
- **Insurance/Payer:** Choose from a dropdown list comprised of list of payer types from the Payment Typology Codeset 5.0.

Running the filtered report

Once you have set your parameters for filtering the existing report, click the **Run Filter** button to generate the filtered QRDA-Is and QRDA-III.

Gathering data from the vendor system

The CQMsolution stored procedure used for gathering data from the vendor system is called "spGetCQMDataForReport." This stored procedure method may or may not make use of an intermediate table structure (as opposed to taking in data from your main database).

If a client passes data to CQMsolution via stored procedure, all data CQMsolution takes in from the client will remain in the CQMsolution database. As this data is not filtered by default, some fields that are not directly involved in measure calculation remain and may prove useful for other quality monitoring efforts. These fields include patient encounters and diagnoses available at the time data is called from the client system.

In general, the stored procedure for gathering CQM data is run at the clinician level for ambulatory practices ("Eligible Providers") and can be run at the hospital or clinician level for inpatient providers ("Eligible Hospitals"), depending on how parameters are used to pass data. CQMsolution specifications contain more details regarding the process of taking in data via stored procedure and differentiating between clinicians.

Value Set Object Identifiers (OIDs)
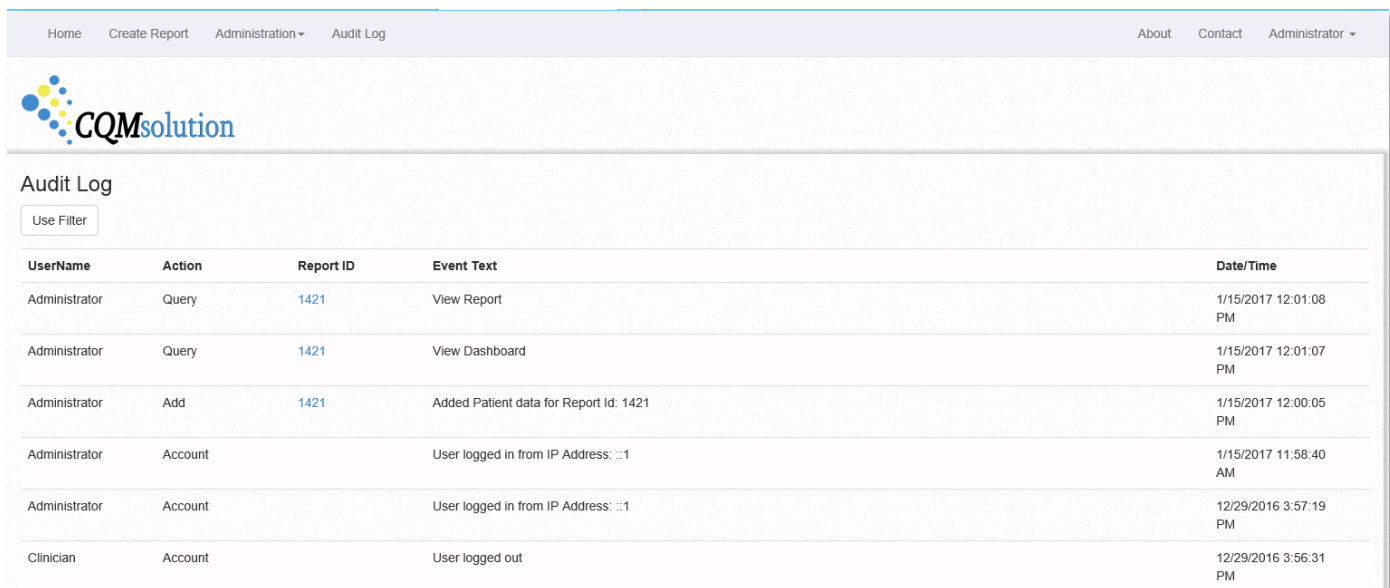
While OIDs are required by Cypress validation, CQMsolution does not require OIDs to be present in vendor data in order to perform calculation as many quality programs will validate successfully without a value set OID specified.

CQMsolution User Documentation

Audit Log

Depending on user level, the log will show either system-wide events (Entity Admin), practice-only (Practice Admin) or user-level (Clinician). The Audit Log screen will provide users with a record of the following action types:
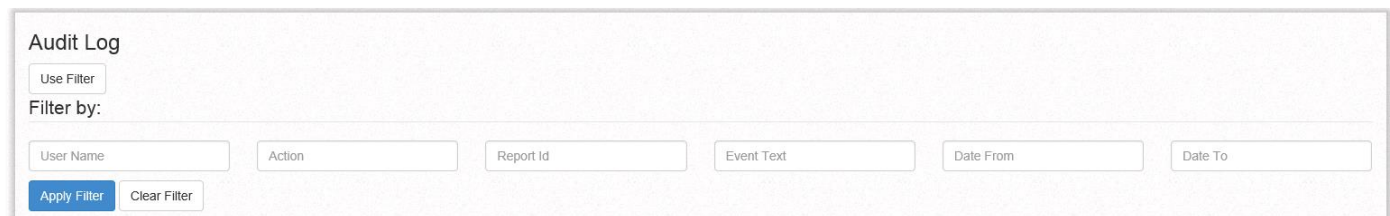
- **Access Patient Information:** Report Detail screen viewed.
- **Account:** User login/logout events.
- **Add:** Patient Data was added for report run.
- **Archive:** Report data was archived and removed from Queue Report (Home) screen.
- **Copy:** A QRDA-III was downloaded in XML or PDF form.
- **Query:** Dashboard screens were viewed.
- **Queue a Report:** Report was initiated by user or API.
- **Report halt:** A report was stopped mid-run by user.

You can click 'Use Filter' to enable filtering of our Audit Log display by Username, Action, Report ID, Event Text, and Date Range:

CQMsolution data storage

CQMsolution database

In the database for CQMsolution, report data are tied to Queue items. For each report you run, there will be a **QueueItem Id** associated with the component data for that report. The details of the report run – whether it is run for an entire practice or a sub-group/individual physician – will determine the level of clinical analysis represented by the QueueItem Id. Knowing the provider and/or practice for which the QueueItem was run is essential to any database queries.

By default, CQMsolution will stored post-calculation staged data within the CQMsolution database (StagedDataItem table). However, this can be limited through configuration: you may choose to retain only one copy of duplicate report runs or use the 'SQL Server v3 Incremental' data source for your practice, which eliminates the retention of Staged Data entirely to optimize performance. Per report Staged Data can also be archived from the Reports screen.

QRDA-I storage

QRDA-I files that are loaded into the database before measure calculation will be stored and accessible. Due to the volume of potential data generated, post-calculation QRDA-I files (per-patient, per-measure) are stored only on the hard drive (within the folder structure detailed previously).

QRDA-III and ePop storage

All QRDA-III XML, ePop and PDF files are stored on the hard drive.

CCBHC spreadsheet output

Excel spreadsheet is not generated until download request from the Report Detail Screen.

Dashboard and drilldown data

The data displayed on the Dashboard and in the patient-level debug screens are read from the database and are fully available there.

User types

There are 4 types of users: Entity Admin, Practice Admin, Report Coordinator, and Clinician.

- **Entity Admin**:
  - Can review all reports for all practices
  - Can configure system settings
  - Can add/edit practices and add/edit users for all practices
- **Practice Admin**:
  - Can review all reports for his/her practice
  - Can add/edit users for his/her practice
- **Report Coordinator:**
  - Assigned a specific home practice, but can run reports for any user at any practice
- **Clinician:**
  - Can review own reports only (run via 'Create Report' feature)

User Drop-down

In the **upper right-hand corner** of the screen, the user drop-down allows any CQMsolution user (admin or clinician) to logout or edit their account settings.

Edit Account

This screen allows you to edit the currently logged in user's account information and select default measures.

Fields marked by an asterisk (*) are required. Please note the password requirements, which apply both to new and existing accounts.

User program selection

Below the Practice Selection dropdown, you can select the program outputs for your user. The checkboxes that appear here will be determined by programs active in your license, with the exception of QRDA Category III, which will be standard in any CQMsolution installation. For each program selected, a program-specific output will be generated when a report is run – assuming at least one patient is evaluated into the Initial Patient Population (IPP) and the program is relevant to the report type (see **page 21** for more detail).

When selecting **MIPS Types**, you must choose either MIPS Individual, for clinicians submitting as a single provider, or MIPS Group, for clinicians using the Group Practice Reporting Option to submit under a single Tax ID Number.

Password complexity

Password complexity for existing accounts will only be checked during login and password changes. If your password does not meet requirements, you will be prevented from updating your credentials and will see the following alert on the screen:

Password does not meet complexity requirements.

The dialog box will specify which requirements are missing from your password.

CQMsolution User Documentation

Appendix A: Measure Categories

eCQM measures in CQMsolution are sorted by category. The following is a key to categories used in the user interface:

CQMsolution tab	Category	eCQMs
AMI	Acute Myocardial Infarction	CMS 030, CMS 053, CMS 060, CMS 100
Asthma	Asthma	CMS 026
BHA	Behavioral Health Adult	CMS 082, CMS 128, CMS 137, CMS 159, CMS 160, CMS 161, CMS 169
BHG	Behavioral Health General	CMS 149
BHA	Behavioral Health Pediatric	CMS 177
Cancer	Cancer	CMS 129, CMS 140, CMS 141, CMS 157
CAP	Community Acquired Pneumonia	CMS 188
Core	Core	CMS 002, CMS 050, CMS 068, CMS 069, CMS 075, CMS 090, CMS 117, CMS 126, CMS 136, CMS 138, CMS 146, CMS 153, CMS 154, CMS 155, CMS 156, CMS 165, CMS 166
Dental	Dental	CMS 074
Diabetes	Diabetes	CMS 122, CMS 123, CMS 134, CMS 142, CMS 148, CMS 163, CMS 167
ED	Emergency Department	CMS 032, CMS 055, CMS 111
Eye	Eye	CMS 131, CMS 132, CMS 133, CMS 143
GPA	General Practice Adult	CMS 022, CMS 061, CMS 064, CMS 065, CMS 124, CMS 125, CMS 127, CMS 130, CMS 139
GPP	General Practice Pediatric	CMS 147
Heart	Heart	CMS 135, CMS 144, CMS 145, CMS 164, CMS 179, CMS 182
HIV	HIV	CMS 052, CMS 062, CMS 077
Newborn	Newborn	CMS 009, CMS 031, CMS 185
Orthopedics	Orthopedics	CMS 056, CMS 066
Pregnancy	Pregnancy	CMS 113, CMS 158
Stroke	Stroke	CMS 071, CMS 072, CMS 091, CMS 102, CMS 104, CMS 105, CMS 107
SCIP	Surgical Care Improvement Project	CMS 171, CMS 172, CMS 178
VTE	Venous Thromboembolism	CMS 073, CMS 108, CMS 109, CMS 110, CMS 114, CMS 190

Appendix B: Report Errors and Warnings

Report error capturing for incomplete report statuses (Validation Errors, Completed: Errors, Failed) is itemized below.

Data validation warnings ('Completed: Warnings')

The following issues are captured after reporting completion or may be reported during pre-calculation validation if Errors are also discovered (resulting in a report status of 'Completed: Warnings'):

- **Encounter rows missing**: If there are no encounters found throughout data, a general warning will be thrown for all patients.
- **NPI found in AUTHOR (not DOCOF):** National Provider ID (NPI) can be passed in D012 of AUTHOR or D012 of DOCOF. However, passing this identifier is more common in DOCOF.

Data validation errors ('Validation Errors' or 'Completed: Errors')

The following issues are currently captured in data validation (resulting in either pre-calculation 'Validation Errors' or post-calculation 'Completed: Errors'):

- **Encounter dates:** Encounter dates will error in either of the following scenarios:
  - Start date is greater than stop date (will not throw error if stop date is NULL/empty)
  - Admit and/or discharge datetimes are malformed; the date must follow the format YYYYMMDDHHMMSS+UUUU (where 'UUUU' is an optional time zone offset)
- **NPI Invalid or missing:** National Provider ID (NPI) number is missing for MIPS-Individual reports. Validation will be performed on Staged Data to ensure, for MIPS-Individual reports, that a ten-digit number is present in expected field(s) – either in the DOCOF or AUTHOR sections. A checksum validation will also be run.
- **Test Result - Physical Quantity is Missing Unit:** For Lab Results (in CQMsolution data section 'TESTRESULT'), there will be an exception when the lab is a physical quantity (PQ) type and the Test Result was performed: if there is a D005 value for the result then a D006 value for the measure unit as well. The literal value 'UNK' can be populated for unit, but it is recommended to have a PQ unit where possible.
- **TIN invalid or missing (in MIPS or pre-2018 HQR):** If your *Practice Edit* screen and data (QRDA-I or staged data) are both missing a valid Tax ID, errors will be reported. In staged data/QRDA-I, at least one TIN is required to be passed on a patient; if not found in client data, the practice screen's configured TIN will be used. Tax ID is required for HQR (pre-2018 reporting year) and MIPS, and a validation check is performed to make sure 9 digits are present.
- **Date of Birth is blank or NULL:** Missing patient DOB will produce a Completed: Errors report status.

Failed report statuses

The following scenarios cause a 'Failed' report status:

- Number of practices in database exceeds limit in license.

- Pre-selected measures for the user are not valid against the selected bundle (this status will only result when using pre-selected measures, as opposed to overriding).
- Critically low memory/storage in environment.
- Stored procedure has missing elements or structural issues a bulk copy of data to fail.
- SQL errors preventing data from loading.
- Any other unhandled errors/exceptions.