



# 4DM Reporting User's Guide

4DM Reporting is a nuclear cardiac reporting engine that comes integrated with 4DM Personal as well as 4DM Integrated (for some vendors). After quantifying and reviewing cardiac perfusion and function in 4DM, utilize 4DM Reporting to report patient results.

**INVIA**

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# Chapter 1 Before You Begin

## Configuring Reporting for Use

### Overview

This section guides users through **4DM Administration** configurations that are required prior to using **4DM Reporting** for optimal workflow functionality. Have your site location, site users' names, and locations for storing reports ready to input into 4DM Administration.

For basic set-up of 4DM Administration for Reporting, follow steps 1-4.

1. Access and log into 4DM Administration (refer to [Accessing and logging into 4DM Administration](#))
2. Define Sites (refer to [Create a new interpreting location](#))
3. Define Users (refer to [Create a new interpreting physician](#))
4. Define Locations for Storing Data (refer to [Configuration for Save and Export Settings](#))

### Accessing and Logging into 4DM Administration

#### Launching 4DM Administration

The 4DM Administration module can be accessed from three different locations:

① **Accessing from within 4DM.** For 4DM Integrated users, access 4DM Administration from within the 4DM application via the **Preferences** window.

1. Click **Preferences** from within the 4DM Control Panel.
2. Click the **Utilities** menu, select **4DM Administration** to open the 4DM Administration Login Window.

② **Accessing from outside of 4DM.** For 4DM Personal users, 4DM Administration is available to launch from the Windows Start menu (*Windows 7 and Windows 10*) or Charm Bar (*Windows 8*).

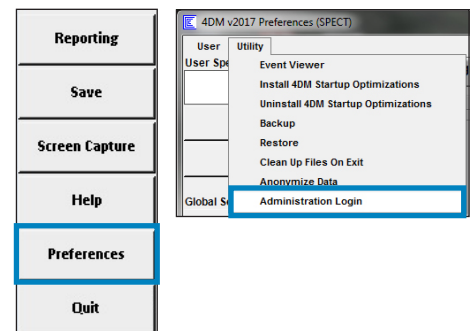
Windows 7 and Windows 10 users:

1. Click the **Windows Start** menu icon.
2. Locate the **INVIA** folder and select **4DM Administration** to open the 4DM Administration Login Window.
  - You can also use the **Search** box to locate and open **4DM Administration**.

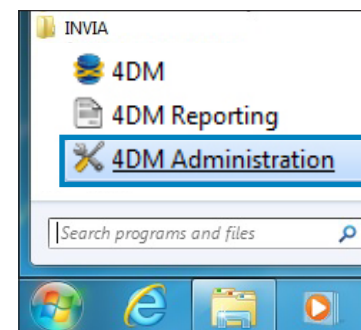
Windows 8 users:

1. On the keyboard, press the **Windows** key to open the main menu, then press the **C** key to display the **Windows Charm Bar**.
2. Click **Search** to display the Search Box.
3. In the Search Box, type **4DM Administration** and select to open the 4DM Administration Login Window.

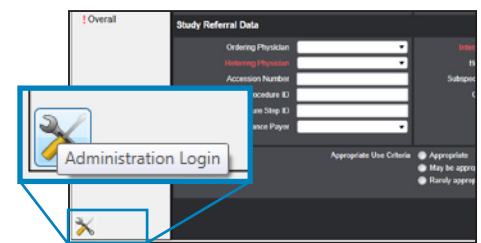
③ **Accessing from within 4DM Reporting.** For users who have 4DM Reporting, access 4DM Administration from within the Reporting interface. Click the **4DM Administration Login** icon in the lower-left corner of the 4DM Reporting application to open the 4DM Administration Login Window.



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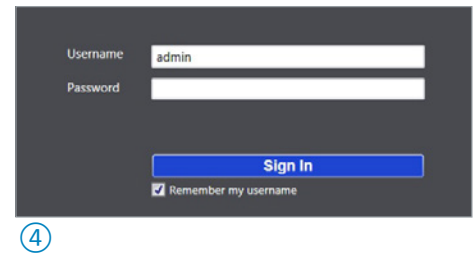
③

## Logging into 4DM Administration

Upon initial launch of 4DM Administration after installation, enter the default Administrator username and password in the login window ④.

- Verify the default username, **admin**, is populated in the Username field.
- There is no initial password. Leave the Password field blank.
- Select **Sign In**.

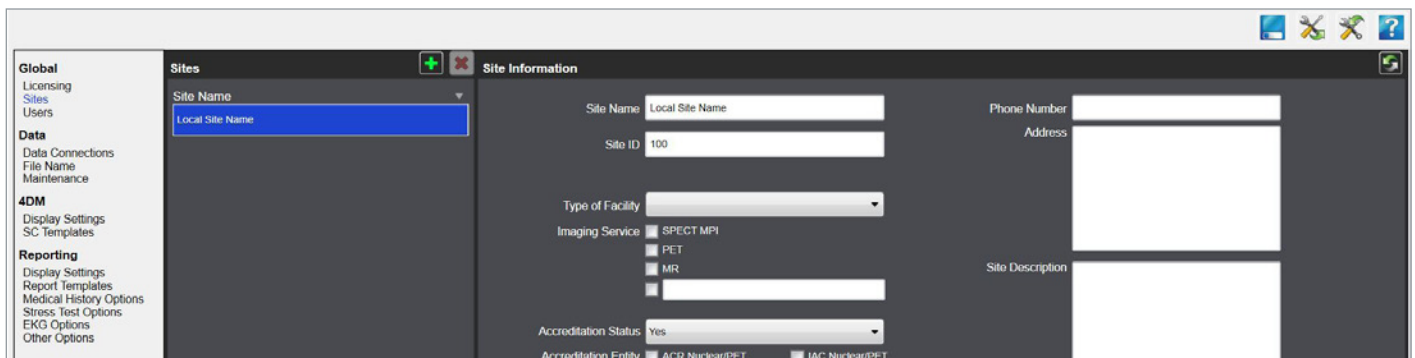
To change the admin password refer to 4DM Administration's User's Guide, Chapter 2: Logging into 4DM Administration.



④

## Create a New Interpreting Location

4DM Administration allows the user to define site-specific information to be displayed on formatted report templates.



Within **4DM Administration**:

On the Sites page, a default Site Name “Local Site Name” is listed for customizing.

To edit the default site, perform the following:

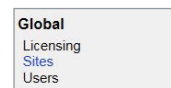
1. Click **Sites** ① in the left navigation panel.
2. Verify the default Site Name “**Local Site Name**” is selected. ②
3. In the **Site Information** section ③, edit the **Site Name** by typing the desired site name in the required field.
4. When necessary, edit the **Site ID** field. A Site ID field is available for use by accredited sites (e.g. ACR), but is not required.
5. When necessary, edit other optional fields available: **Type of Facility, Imaging Service, Accreditation Status, Accreditation Entity, Phone Number, Address, and Site Description**.
6. To save the Interpreting Location, click **Save** ④ in the toolbar.

To include a site logo within the site’s report templates, refer to [Add a Site Logo](#) ⑤.

To add a new interpreting location on the sites page, select the **Add** ⑥ tool, "New Site Name" will appear, and follow steps 3-5.

To remove a highlighted interpreting location on the sites page, select the **Remove** ⑦ tool.

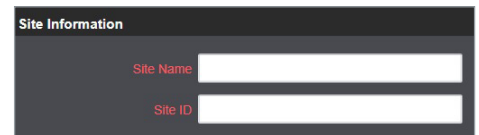
**Note:** Interpreting Physicians and Report Templates must be assigned to each site created. Refer to [Editing Report Templates](#) and [Create a New Interpreting Physician](#).



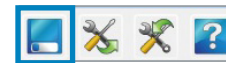
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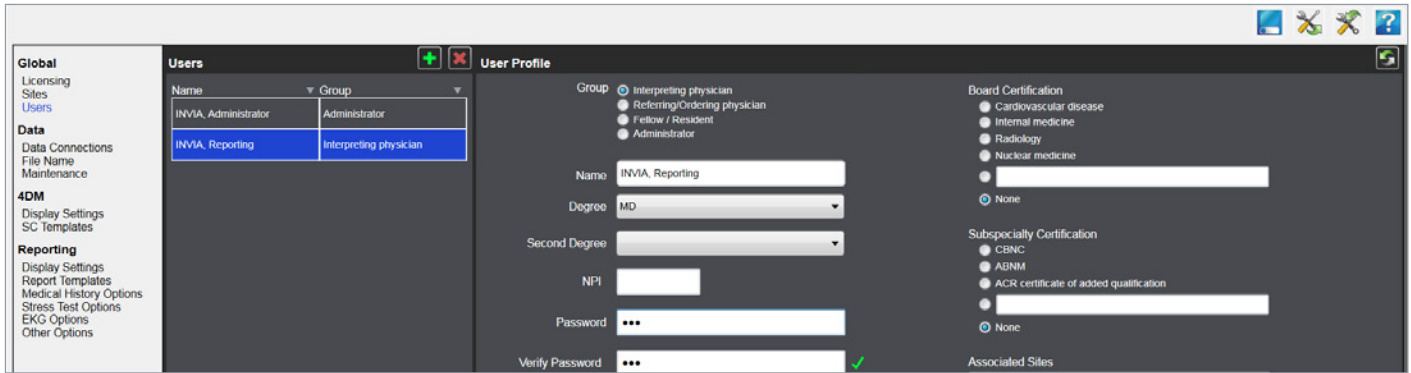
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## Create a New Interpreting Physician

The users in the interpreting physician group are the only 4DM users that are allowed to be the primary reader on 4DM diagnostic reports.

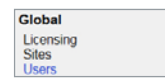


### Within 4DM Administration:

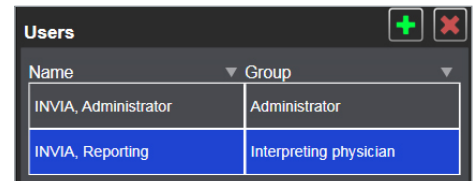
On the Users page, a default User Group “Interpreting Physician” is listed for customizing.

To edit the default User Group, perform the following:

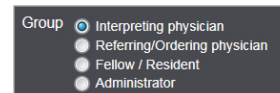
1. Click **Users** ① in the left navigation panel.
2. Select the default **Interpreting Physician** ②.
3. Verify **Interpreting Physician** ③ is selected from the Group.
4. Click the **Name** field, and in the drop-down window enter the required fields, highlighted red when empty.
5. Create a password by entering it into the **Password** field.
  - **Note:** This will be required when the interpreting physician finalizes the report.
6. Enter the password again, in the **Verify Password** field.
7. Click **Associated Sites** ④ box, and select the interpreting location(s) the physician is affiliated with.
8. To include the Interpreting Physicians image signature in the site’s report templates, **Browse** ⑤ and select the image.
  - Once linked, a Preview of the signature will display below.
  - 4DM automatically copies the image to the directory it needs in order to include the signature on reports.
9. When necessary, edit other optional fields available: **Degree, Second Degree, NPI, Board Certification, Subspecialty Certification, Email, Phone, Fax, and Address.**
10. To save Administrator configurations, select **Save** ⑥ in the toolbar.



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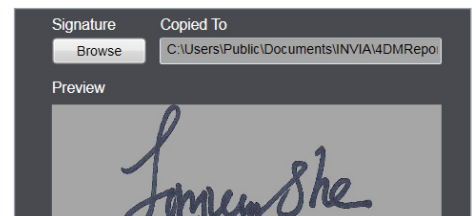
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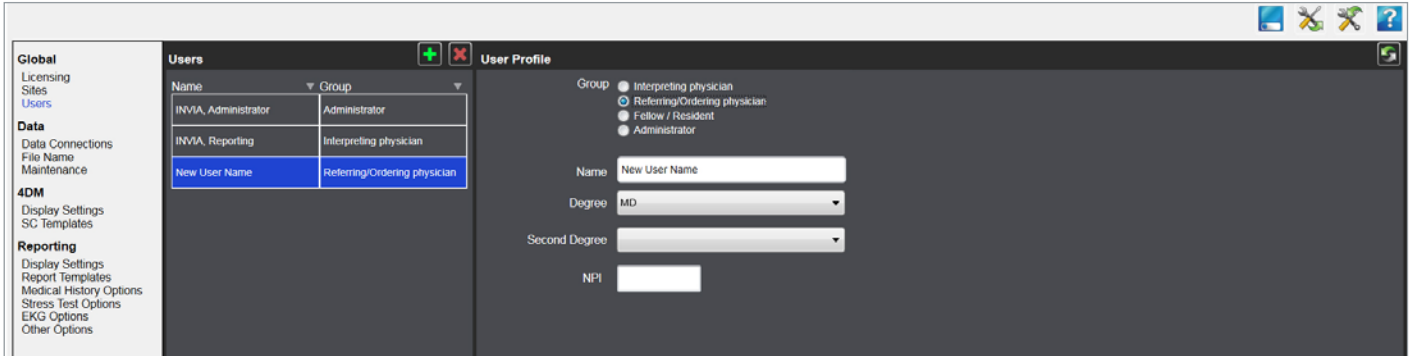
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## Create a New Referring and Ordering Physician

The users in the referring/ordering physician group do not need username and password credentials to sign reports.



Within **4DM Administration**:

To create a new referring/ordering physician, perform the following:

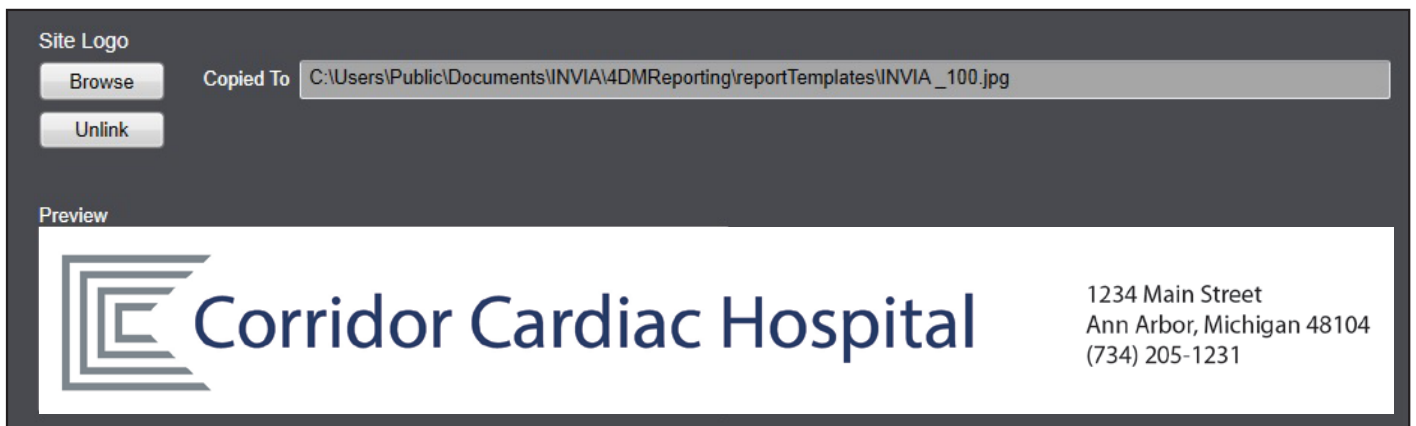
1. Click **Users** ① in the left navigation panel.
2. Click **Add** ② tool.
3. Select **Referring/Ordering Physician** ③ from the Group.
4. Click the **Name** field, and in the drop-down window enter the required fields, highlighted red when empty.
5. When necessary, edit other optional fields available: **Degree, Second Degree, NPI, Email, Phone, Fax, and Address.**
6. To save Administrator configurations, select **Save** ④ in the toolbar.



## Add/Remove a Site Logo

This section explains how to add/remove a site logo, or multiple logos using one of the following formats: JPEG, PNG, GIF, TIFF, or BMP. It is recommended to create a single banner logo file including the facility name, facility address, facility logo and accreditation logos.

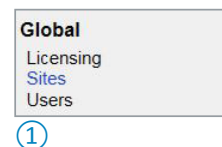
**Note:** If there are multiple logos, you must first merge the logos into one file before adding the image within 4DM Administration.



Within **4DM Administration**:

To add a new logo, perform the following:

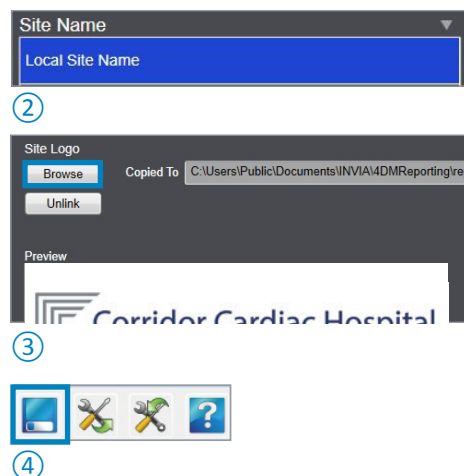
1. Click **Sites** ① in the left navigation panel.



2. Click the **Site** ② for which you desire to add a logo.
3. Click **Browse** ③ to locate the facility banner logo file.
4. Select the file name and click **Open** to add the logo.
  - Once linked, a Preview of the image will display below.
5. To save the site logo, click **Save** ④ in the toolbar.

Note: A site logo report tag must be added into the report templates to include the logo image in the finalized report. Refer to [Add a Site Logo Tag to the Report Template](#).

To remove a site logo click the **Unlink** button. This action will remove the logo from the report template.



## Customizing the User Interface

The 4DM Reporting user interface allows the user to customize, within 4DM Administration, the list of terms for the following pages: **Medical History**, **Stress Test**, **EKG Screen**, and **LV Perfusion**. By default, these pages include widely used terms following ASNC reporting guidelines for entering patient information to the report. The terms listed on each page reflect what options are available to select when entering patient information into the report.

This section explains how to add user defined terms, sort, reset, delete, and move up or move down the list of terms.

To customize each screen, a basic set of tools are used. The tools are located on the upper right corner of each control panel box. The basic controls ① of the tools are: **Add +**, **Sort** ↕, and **Reset** ↻.

Three additional tools are available when an option is selected ②: **Delete** ✖, **Move Up** ↑, or **Move Down** ↓.

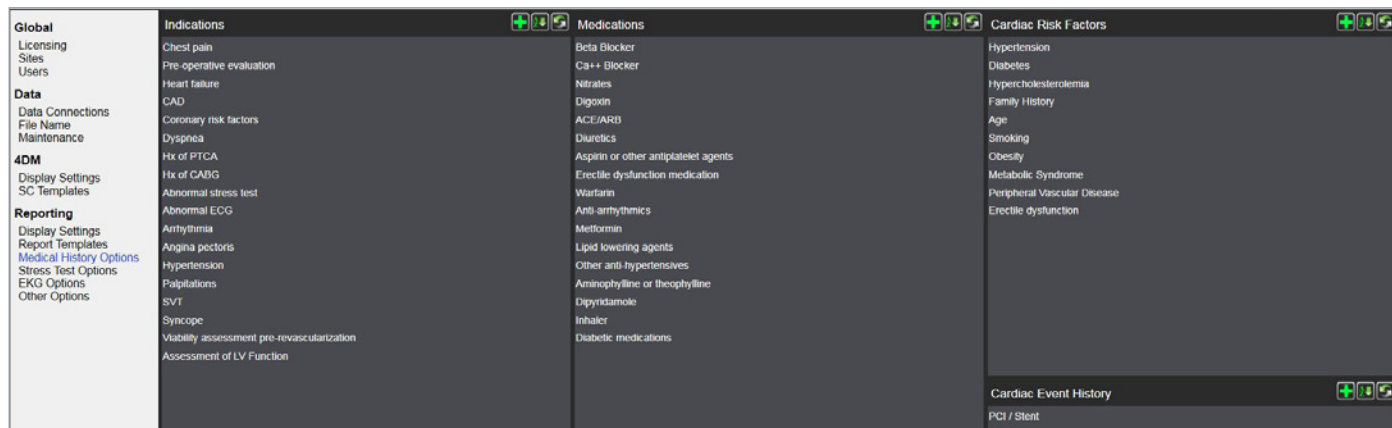
For further information on tool controls, refer to [Using Application Controls](#).



### Medical History Page

Four sections are available on this page. Verify that the 4DM provided options in each control panel are appropriate for your hospital or clinic. Use the section's tools to add or remove options, or modify the order.

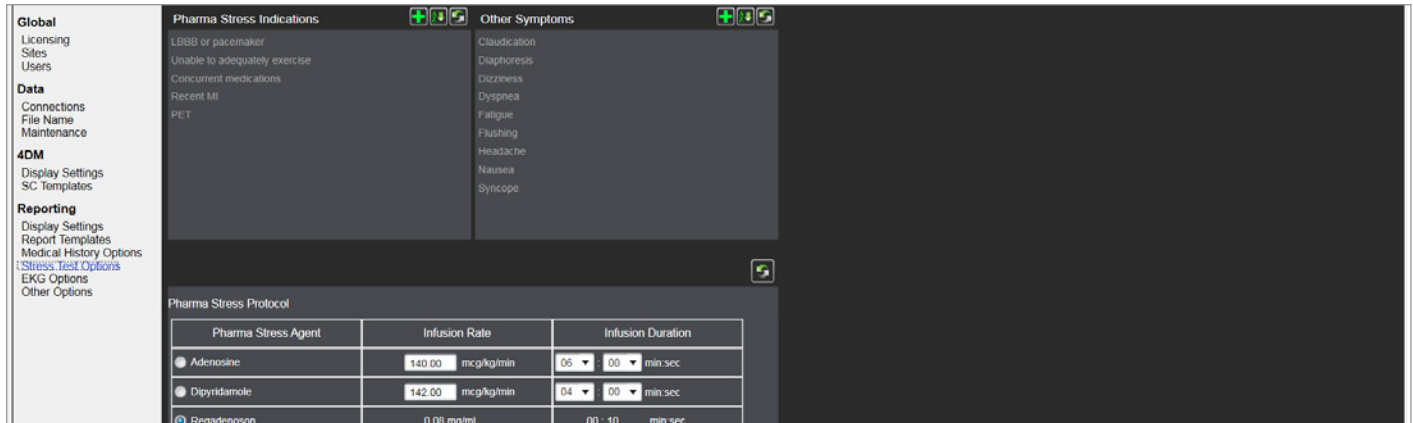
- Indications
- Medications
- Cardiac Risk Factors
- Cardiac Event History



## Stress Test Page

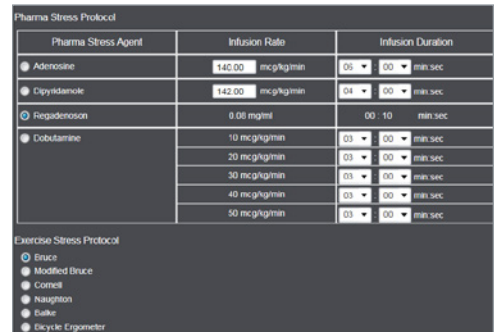
Three sections are available on this page. Verify that the 4DM provided options in each section are appropriate for your hospital or clinic. Use the section's tools to add or remove options, or modify the order of the options.

- Pharmacologic Stress Indications
- Other Symptoms
- Stress Protocol



Define the default settings for the Pharmacologic and Exercise Stress Protocols ③:

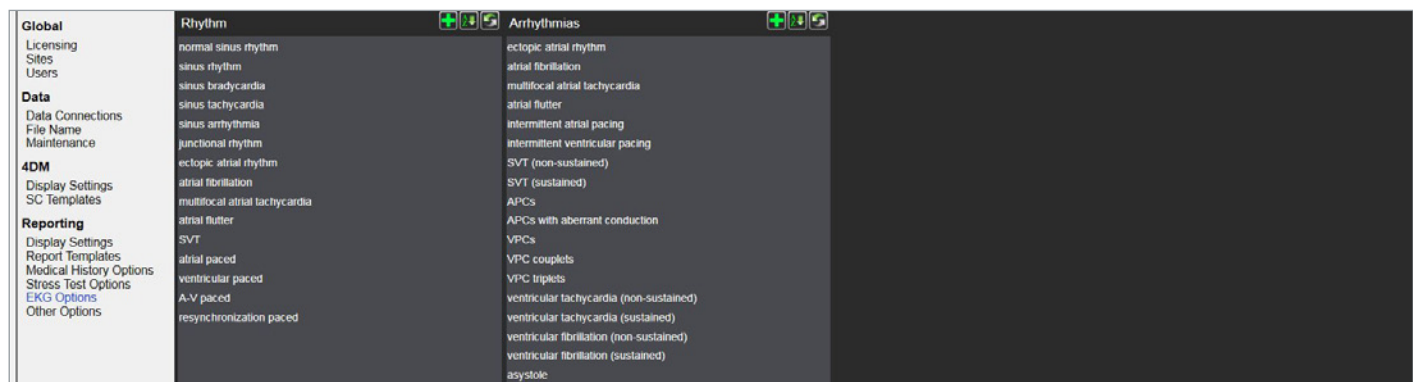
1. Use the toggle to select a default **Pharmacologic Stress Agent**.
2. Define default **Infusion Rate** for Adenosine or Dipyridamole (IN VIA defines the standard infusion rate for Regadenoson and Dobutamine).
3. Define the **Infusion Duration** for the selected pharmacologic stress agent using the drop-down menu in minutes and seconds.
4. Use the toggle to select a default **Exercise Stress Protocol**.



## EKG Page

Five sections are available on this page. Verify that the 4DM provided options in each section are appropriate for your hospital or clinic. Use the control section's tools to add or remove options, or modify the order.

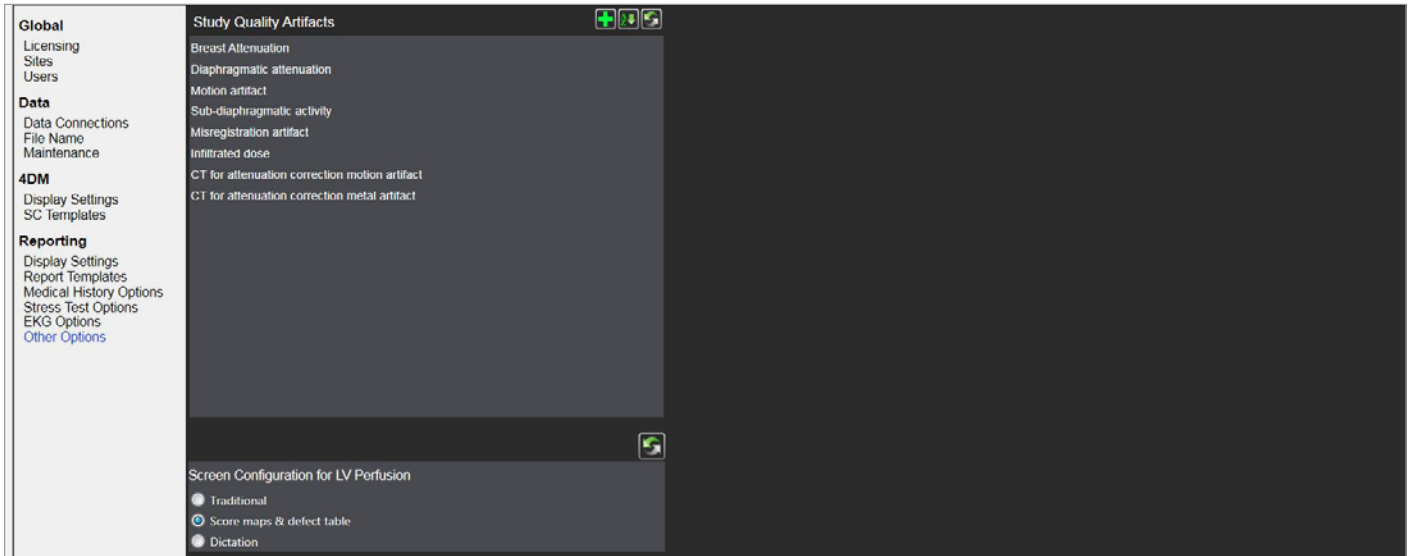
- Rhythm
- Arrhythmias
- AV Block
- IV Conduction
- Repolarization



## LV Perfusion Page

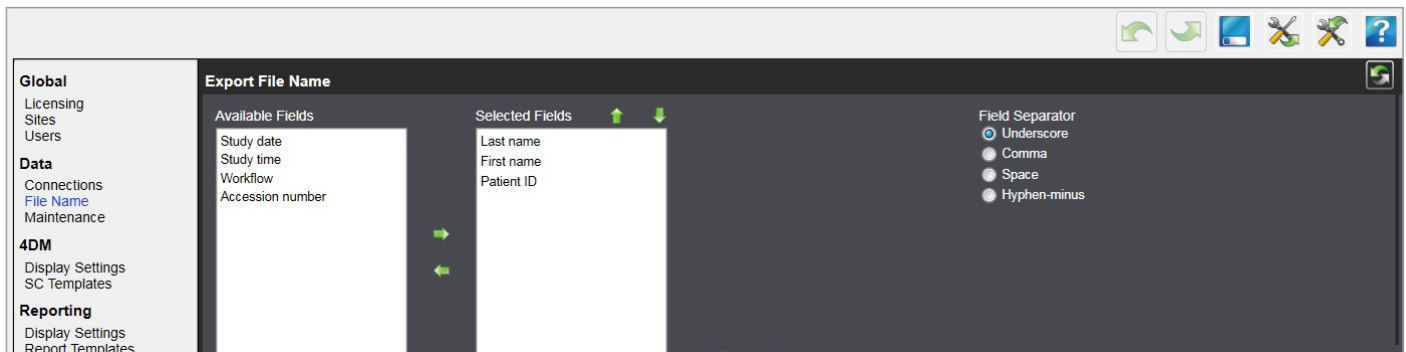
In the left navigation panel, select the **Other Options** page. Select a default Screen Configuration for LV Perfusion for Reporting.

- **Traditional:** Utilize the defect sentence generator to construct impression sentences. Traditional mode is only available when the Reporting language setting is set to English.
- **Score maps:** 4DM generates impressions using the scored maps.
- **Dictation:** Use a text box to free text impressions, or the user may enter impressions using a dictation device.








## Define the Naming Convention for the Report File Name

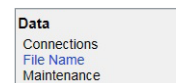
Customize 4DM to generate a standard file naming convention for patient reports, so that each patient report has a consistent file name that clearly identifies the report based on the information most important to your hospital or clinic. By default, the file names for 4DM reports will be saved as: **Last Name\_First Name\_Patient ID**.



To modify that naming convention or to use a separator other than an underscore, follow the steps below.

Within **4DM Administration**:

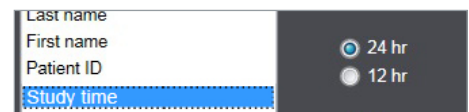
1. Locate and select the **File Name** page ①
2. Select a field from the **Available Fields** and use the **Add** tool  to move it to the **Selected Fields**.
  - Any selected field can be removed. Highlight it in **Selected Fields** and use the **Remove** tool  to push it back to the **Available Fields**
3. The **Selected Fields** order is organized by using the **Move Up**  or **Move Down**  arrows.
  - If **Study Date** is moved over to **Selected Fields** ②, the user is prompted with three date formats to choose from.
  - If **Study Time** is moved over to **Selected Fields** ③, the user is prompted with two time formats to choose from.
4. In the file name, each field is separated by an underscore by default. To change this, choose a different option under the **Field Separator** ④.
5. A **File Name Preview** ⑤ of the new file name updates automatically with any changes to this page.
6. To return to the INVIA default File Name settings, select the **Reset**  tool ⑥ to revert your changes.
7. Select **Save** ⑦ to save any changes to the file name.



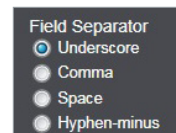
①



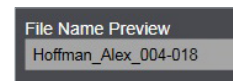
②



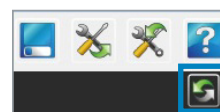
③



④



⑤



⑥



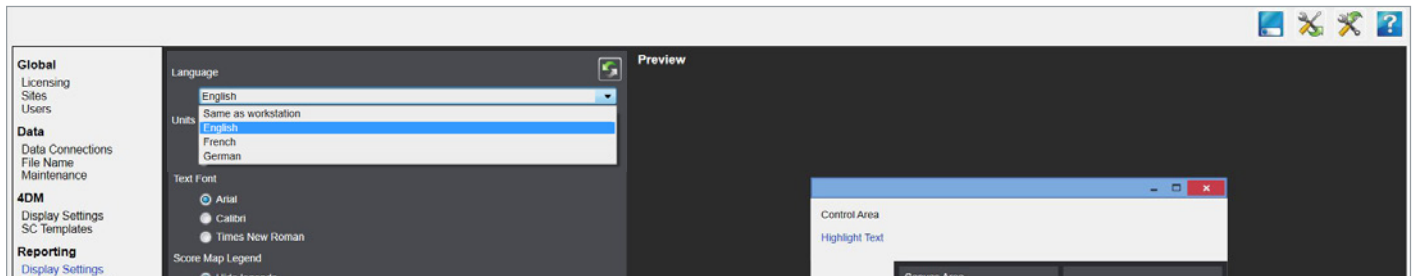
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# Configuring Reporting Display Settings

## Change the Language to German or French

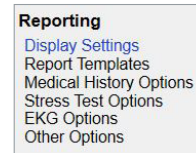
4DM Reporting supports three languages: English, French, and German. The default setting is to use the same language as the computer 4DM is installed on. If the computer-defined language setting is not supported by 4DM Reporting, the language will default to English.

Changing 4DM's language setting to English, French, or German will automatically update 4DM Reporting's language setting to match. Additionally, modifying 4DM Reporting's language setting will automatically update 4DM's language setting to match. If the user selects a language in 4DM other than English, French, or German, 4DM Reporting defaults to English.

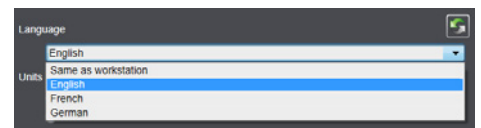


Within **4DM Administration**:

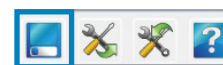
1. Under the Reporting heading, select the **Display Settings** page ①.
2. Use the **Language** drop-down menu ② to select one of the supported language settings for 4DM Reporting,
3. Click **Save** ③ in the toolbar and close out of all 4DM applications. The language setting will display upon relaunch of 4DM and/or 4DM Reporting.



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②

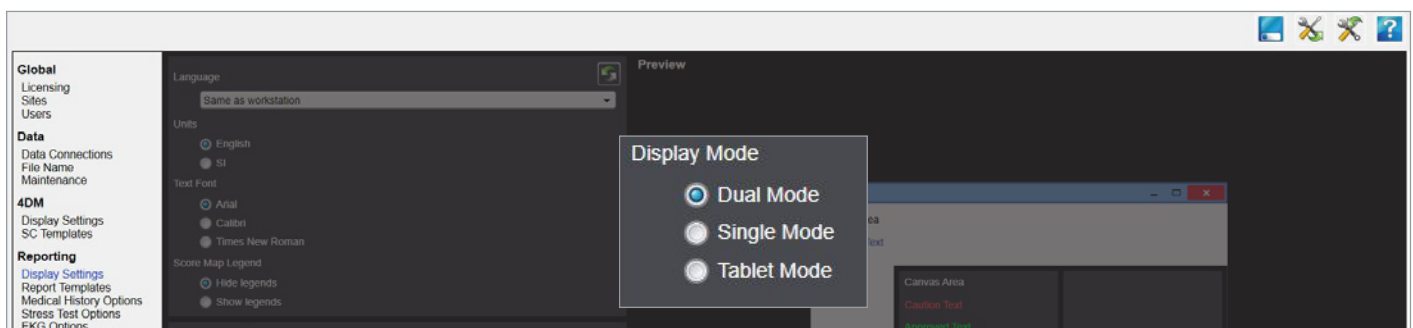


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## Optimizing Display Settings for Multi-Monitors or Tablets

4DM Reporting can display either one or two (side-by-side) data pages on a single screen. This in turn impacts how the report preview will display. The font size of 4DM Reporting scales up or down depending on the size of the 4DM Reporting window, or if the application is displayed in Tablet Mode.

Three display modes are available: Single, Dual, and Tablet Mode. Note that these modes do not necessarily correlate to the monitor set-up being used – for example, a dual monitor set-up, though recommended, is not required for Dual Mode.



Within **4DM Administration**:

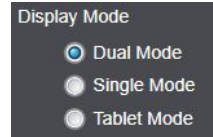
1. Locate and select the **Display Settings** ① page.
2. Use the **Display Mode** ② toggle to select the desired display mode.
  - **Dual Mode:** Displays two data pages side-by-side on one monitor. The second data page can be replaced with a preview of the report by clicking the Preview tool. In a dual monitor setup, 4DM can be displayed on one monitor, while 4DM Reporting in Dual Mode can be displayed on the other.
  - **Single Mode:** Displays one data page at a time. If Preview is selected, the report preview will be displayed over top of the data page. In a dual monitor setup, 4DM can be displayed on one monitor while 4DM Reporting in Single Mode can be displayed on the other.
  - **Tablet Mode:** Displays one data page at time at a magnification of 1.8 times greater than Single or Dual Mode.

**Note:** 4DM Reporting can be installed on any tablet with a Windows 7.0 operating system or higher.

3. Click **Save** ③ and close out of all 4DM applications. The display mode configuration will display upon relaunch of 4DM Reporting.



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②



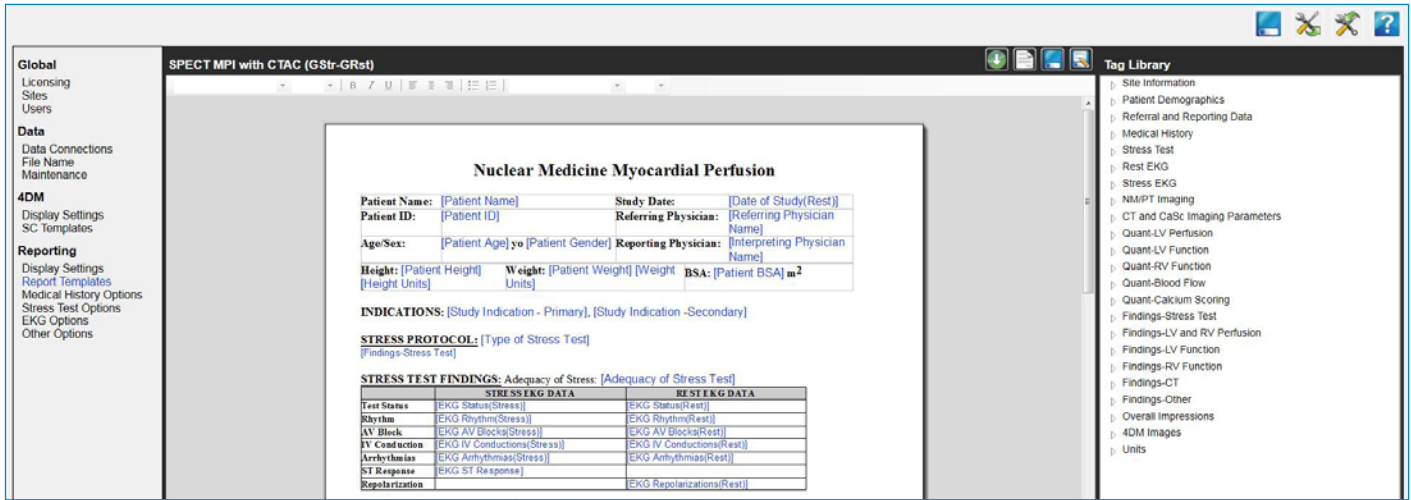
③

# Editing Report Templates

## Overview

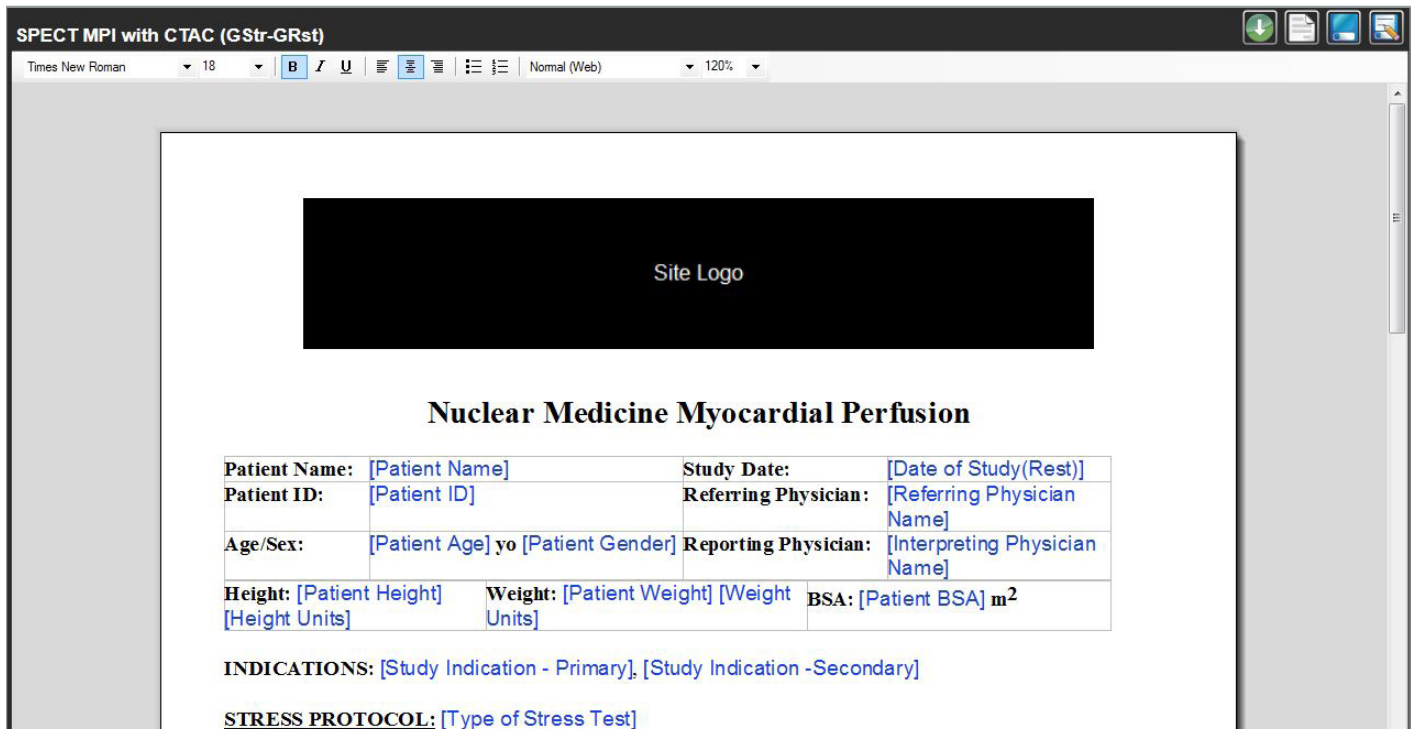
4DM Reporting includes standard report templates appropriate for varying study protocols, to seamlessly transfer reported findings and quantitative values into a formatted structured report. There are multiple template choices available in English, French, and German, and range from PET, SPECT, and Planar or SPECT Blood Pool. Additional options are available that include CT with calcium scoring.

The templates provided following ASNC reporting guidelines and are ready for use, however, can be customized to fit your site's desired structure and layout for a final report. This section explains how to create new report templates, add/remove report tags to a template, applying templates to specific sites, adding free text sentences, and changing the text font.



## Add a Site Logo Tag to the Report Template

Prior to adding a site logo report tag, your site logo image must be saved in 4DM Administration, refer to [Add/Remove a Site Logo](#).



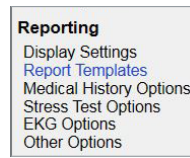
Within **4DM Administration**:

To add a site logo tag, perform the following:

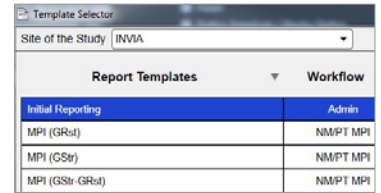
1. Locate the Reporting heading and select **Report Templates** ①.
2. Select the **Template Selector** ② from the template canvas toolbar.
3. Select the desired template that fits your sites imaging protocol (e.g. MPI GStr-GRst).
4. The Tag Library section lists all the report tags included with 4DM Reporting. Click the **Site Information** category to display associated report tags.
5. Click and drag the **Site Logo** ③ tag to the desired location within the report template.
  - At any point a preview of the report template can be displayed by selecting **Preview** ④ in the Template Canvas toolbar.

Different logos can be assigned to sites within one organization, such as when locations have different clinic names. Use the **Preview** ⑤ drop-down to select a site to associate with the template.

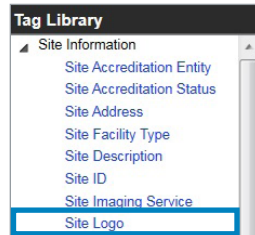
- If no site is associated with a template, 4DM will provide sample data for preview.
  - If one site is associated with a template, the site's logo image will be present for preview.
  - If multiple sites are associated with a template, the selected site's logo image will be present for preview.
  - If multiple sites within an organization are associated with a template but no site is selected, the first listed site's logo image will be present for preview.
6. Two save options are available to save the report template:
    - Select **Save As** ⑥ in the Template Canvas toolbar:
      - > The Save As tool allows the user to overwrite the existing template with the same file name, or create a new file name for the customized template.
      - > A window will open to allow the user to edit the **File Name**, associate the template to a specific **Workflow**, and apply the report template to configured sites.
      - > Select **Save As...** to continue saving the report template.
    - Select **Save** ⑦ in the Template Canvas toolbar.
      - > The Save tool allows the user to override the previous template.
      - > The file name of the template will remain the same.



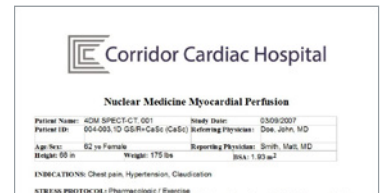
①



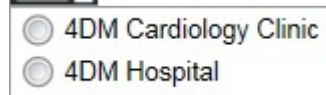
②



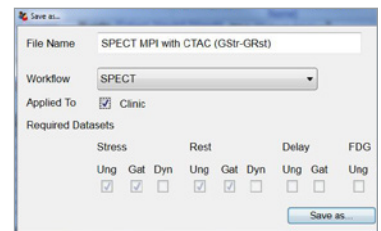
③



④



⑤



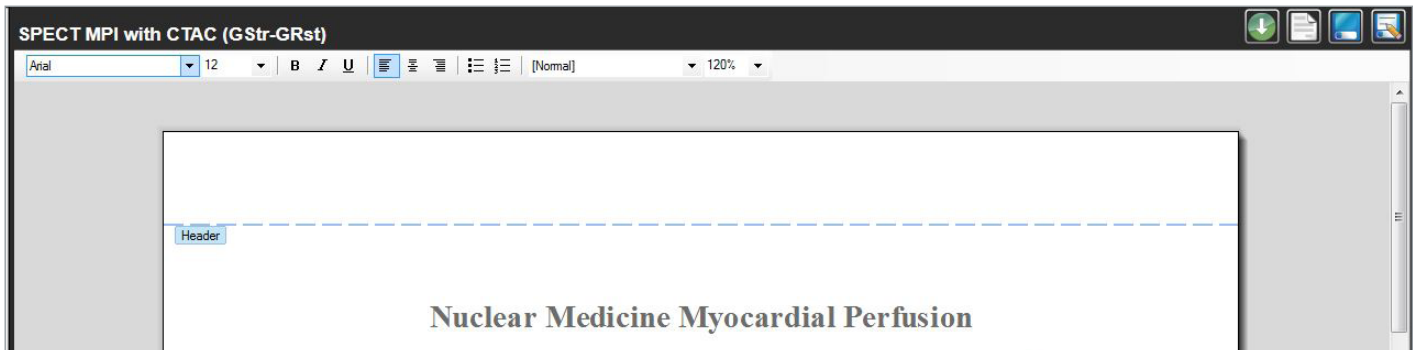
⑥



⑦

## Add a Header and Footer

Organizations may choose to add the hospital or clinic information in the header of a report template. Commonly added information includes; a site logo image, accreditation status, or the facility location in the header area.

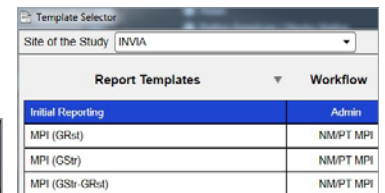


### Within 4DM Administration:

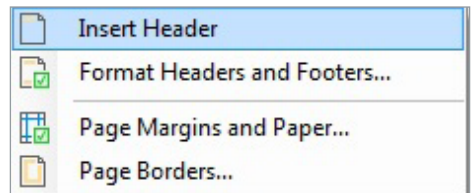
1. Select **Report Templates** ① in the left navigation panel.
2. Click the **Template Selector** ② located in the Template Canvas toolbar to select the desired template.
3. Right-click in the header area of the report template and select **Insert Header** ③.
4. Customize a report template header or footer one of three ways:
  - Use free text to type header information
  - Left-click and drag a report tag from the **Tag Library** to the header
  - Right-click in the header area of the report template and select **Format Header** ④. A page setup window will open to adjust header margins and design.
5. Two save options are available to save the report template:
  - Select **Save As** ⑤ in the Template Canvas toolbar:
    - > The Save As tool allows the user to overwrite the existing template with the same file name, or create a new file name for the customized template.
    - > A window will open to allow the user to edit the **File Name**, associate the template to a specific **Workflow**, and apply the report template to configured sites.
    - > Select **Save As...** to continue saving the report template.
  - Select **Save** ⑥ in the Template Canvas toolbar.
    - > The Save tool allows the user to override the previous template.
    - > The file name of the template will remain the same.



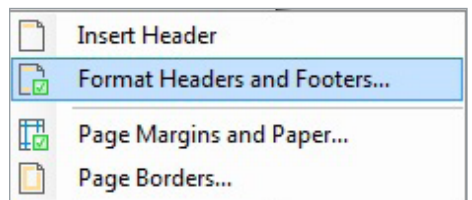
①



②



③



④



⑤



⑥

## Change the Report Text Font

Font describes the displayed text character in a specific style and size. All text within a report template can be edited; however certain areas within the template such as the header, or body of the report can be isolated with a specific font style or size.



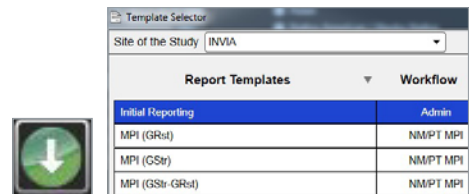
Within **4DM Administration**:

1. Select **Report Templates** ① in the left navigation panel.
2. Click the **Template Selector** ② located in the Template Canvas toolbar to select the desired template.
3. Left-click to highlight all text ③ to change the font using the Template Canvas text editing tools.
4. The default font of any text within a report may be changed. In addition, the text font may be set prior to entering new content in the report template.
5. Several fonts and font sizes are available in the top toolbar ④ for selection.
  - Select **Save As** ⑤ in the Template Canvas toolbar:
    - > The Save As tool allows the user to overwrite the existing template with the same file name, or create a new file name for the customized template.
    - > A window will open to allow the user to edit the **File Name**, associate the template to a specific **Workflow**, and apply the report template to configured sites.
    - > Select **Save As...** to continue saving the report template.
  - Select **Save** ⑥ in the Template Canvas toolbar.
    - > The Save tool allows the user to override the previous template.
    - > The file name of the template will remain the same.

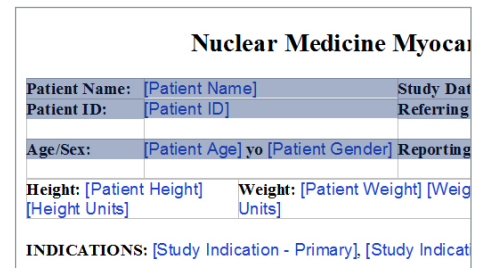
**Reporting**

- Display Settings
- Report Templates
- Medical History Options
- Stress Test Options
- EKG Options
- Other Options

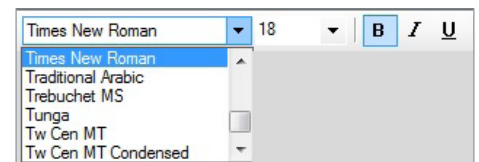
①



②



③



④



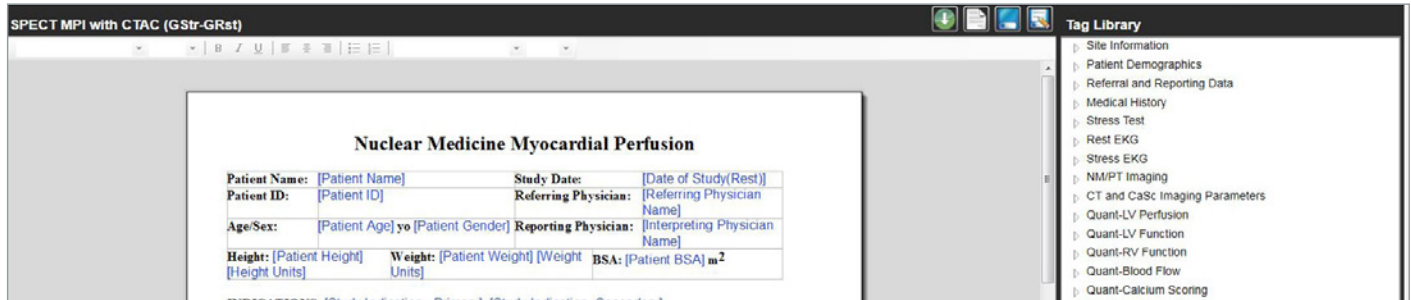
⑤



⑥

## Working With Report Tags

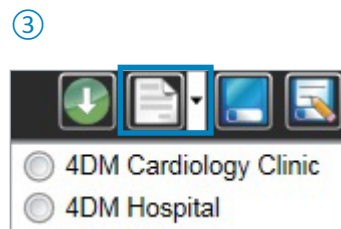
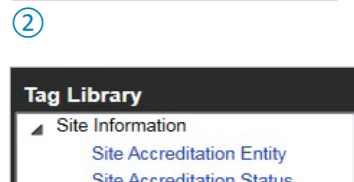
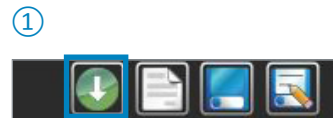
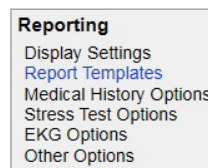
The Reporting Template Editor utilizes structure report tags to transfer information from a patient dataset to the physician's report. Within each 4DM report template, the tags are set-up as bracketed text. Several types of data elements are represented by tags such as, Site Information, Patient demographics, Left Ventricle Quantification, and 4DM Images. Twelve report tag categories are available in the Tag Library, for further information on the available report tags refer to the Structured Report Tag Help Sheet. This section explains how to add or delete report tags within a template.



### Within 4DM Administration:

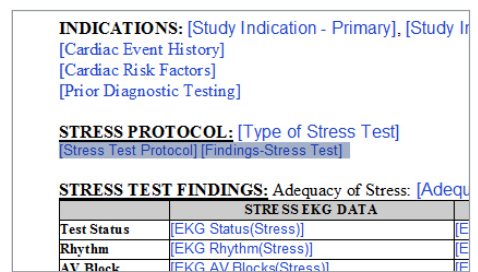
To add a report tag, perform the following:

1. Select **Report Templates** ① in the navigation panel.
2. Use the **Template Selector** ② located in the template canvas toolbar to select the desired template that most suits your sites imaging protocol.
3. The **Tag Library** ③ panel lists all the report tags included with 4DM Reporting. To display the associated tags, select the correct category and click the arrow to display an expanded list of report tags.
4. Select the appropriate category to display the associated report tags.
5. Click the associated tag, then drag and drop that tag directly to the preferred location within the report template.
6. At any point a preview of the report template can be displayed by selecting the **Preview** tool in the template canvas toolbar.
  - If there are multiple sites, use the **Preview** ④ drop-down icon to display a preview of the template. Select a site associated with the template to view that site's information and logo image within the report template.



To remove a report tag, perform the following:

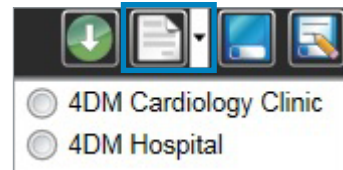
1. To remove a report tag from a template click to highlight ⑤ the entire tag within the report template.
2. Using your keyboard, **Backspace** or **Delete** to remove the tag from the report template.
3. A preview of the report template can be displayed by selecting the **Preview** tool in the template canvas toolbar.
  - If there are multiple sites, use the **Preview** ⑥ drop-down tool to display a preview of the template. Select a site associated with the template to view that site's information and logo image within the report template.



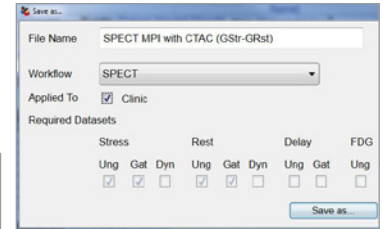
⑤

To save a template, perform the following:

1. Two save options are available to save the report template:
  - Select **Save As** ⑦ in the Template Canvas toolbar:
    - > The Save As tool allows the user to overwrite the existing template with the same file name, or create a new file name for the customized template.
    - > A window will open to allow the user to edit the **File Name**, associate the template to a specific **Workflow**, and apply the report template to configured sites.
    - > Select **Save As...** to continue saving the report template.
  - Select **Save** ⑧ in the Template Canvas toolbar.
    - > The Save tool allows the user to override the previous template.
    - > The file name of the template will remain the same.



⑥



⑦



⑧

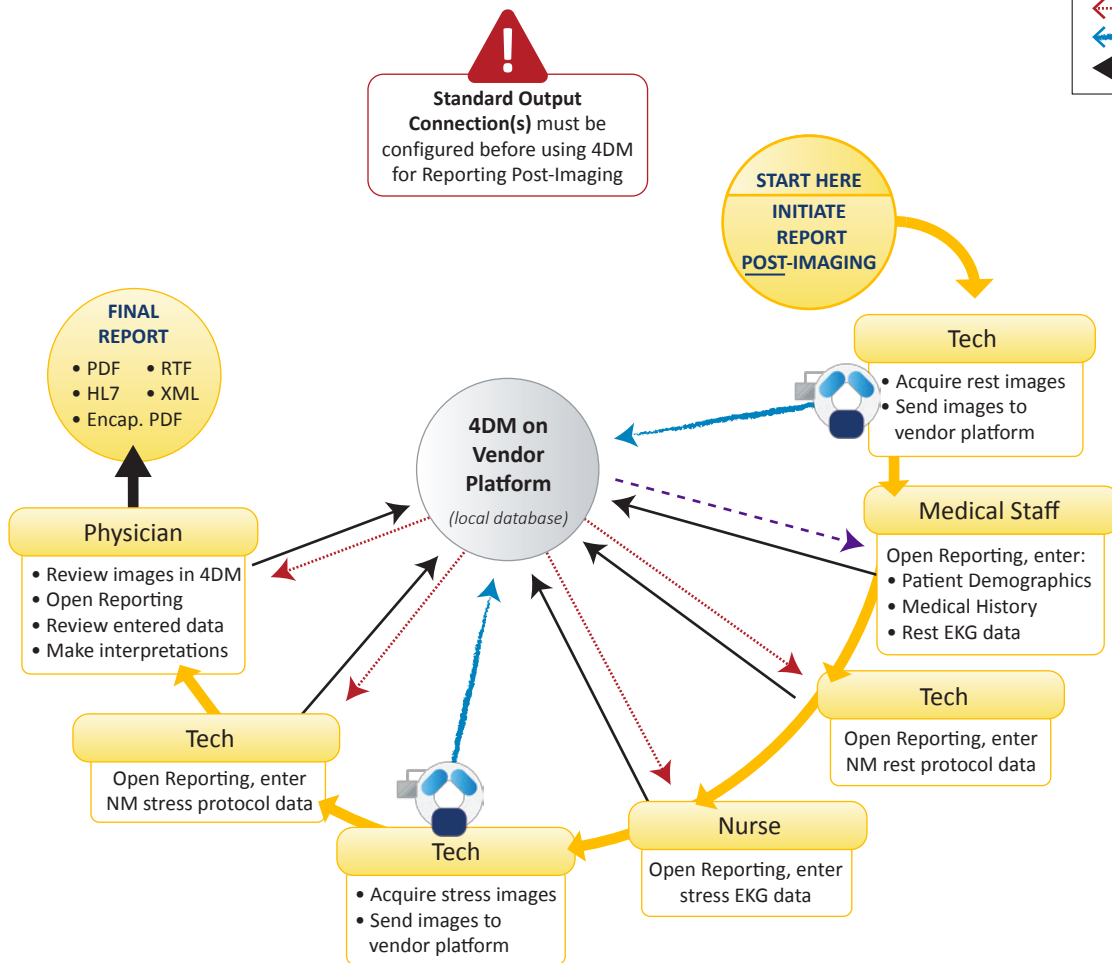
# Configuration for Save and Export Settings

Before Physicians and Medical staff can begin using the reporting module, locations to temporarily store in-process reports as well as to send the final report to must first be configured. The flow diagrams below depict two typical workflows for obtaining and reporting on a nuclear cardiology study, displaying the various roles of staff members in the reporting process. There are two primary use cases for the way reporting is used:

- In the 4DM Integrated version, integrated on various reseller platforms, users can only initiate reporting after the initial patient dataset images have been loaded into 4DM. The flow chart below (1) depicts the process for this use case.
- In the 4DM Personal software-only version, users can initiate reports two ways, before patient imaging has begun (pre-imaging) or after the initial patient dataset images have been loaded into 4DM (post-imaging). The second flow chart below (2) depicts the process for both use cases.

## 4DM INTEGRATED REPORTING FLOW CHART

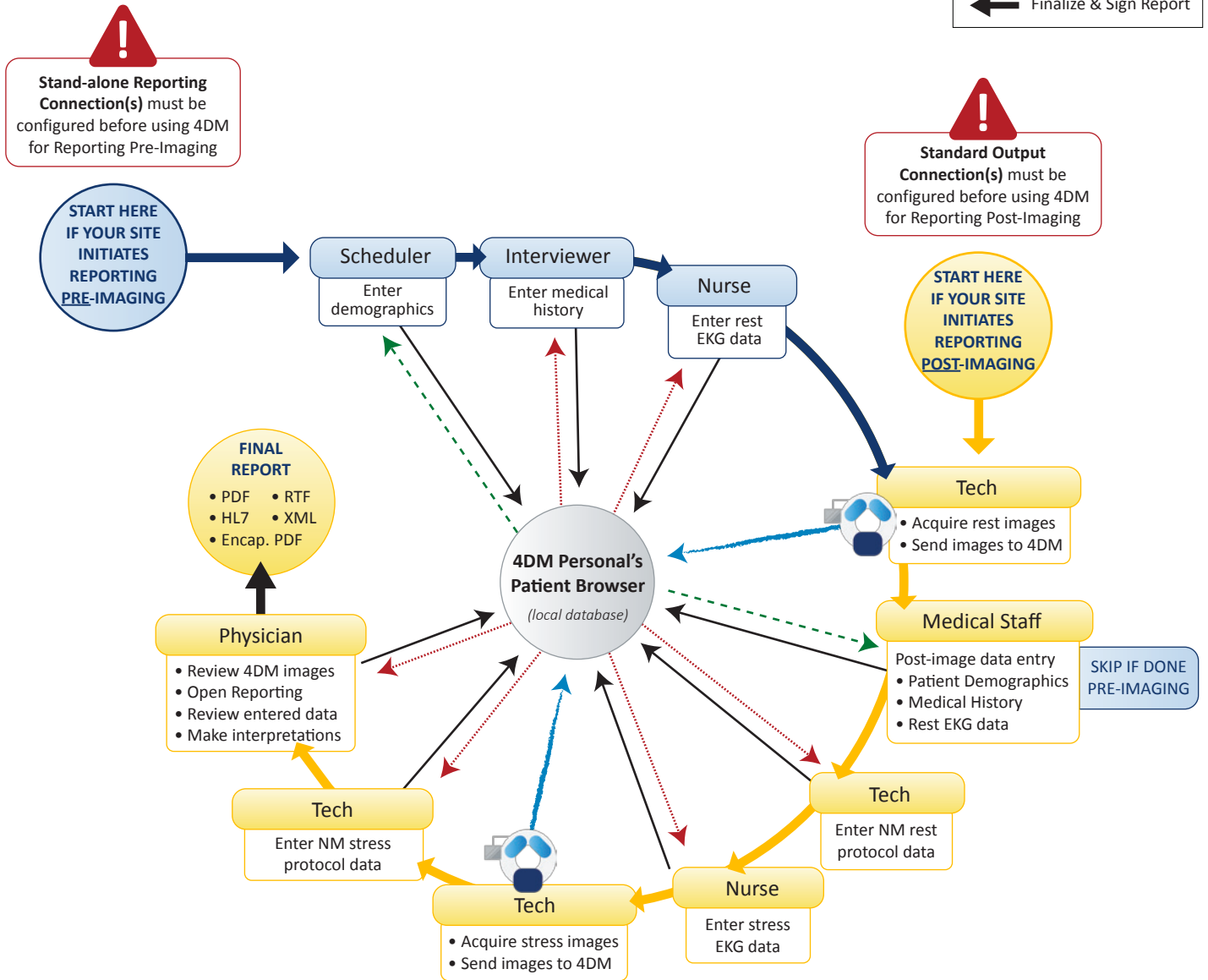
KEY	
	Launch 4DM w/ patient file
	Save patient report
	Launch 4DM, open report
	Image Data
	Finalize & Sign Report



1 Obtain and report a rest / stress patient dataset with 4DM as integrated.

## 4DM PERSONAL REPORTING FLOW CHART

KEY
←--- Initiate patient report
← Save patient report
← Open existing report
← Image Data
← Finalize & Sign Report



② Initiate a report pre- or post-imaging when using 4DM Personal.

## Configuration for 4DM Integrated

The location(s) for 4DM to send the final patient report to has to be entered into 4DM. There are multiple formats for exporting the final report that can be designated from the connections page within 4DM; at the minimum one export option must be configured. These connections are referred to as Standard Output Connections on the connections page. The export options determine what format the final report will be exported and/or saved in. By default these reports are stored in the local database where the patient file is launched from, but alternative destinations can be designated through configuration.

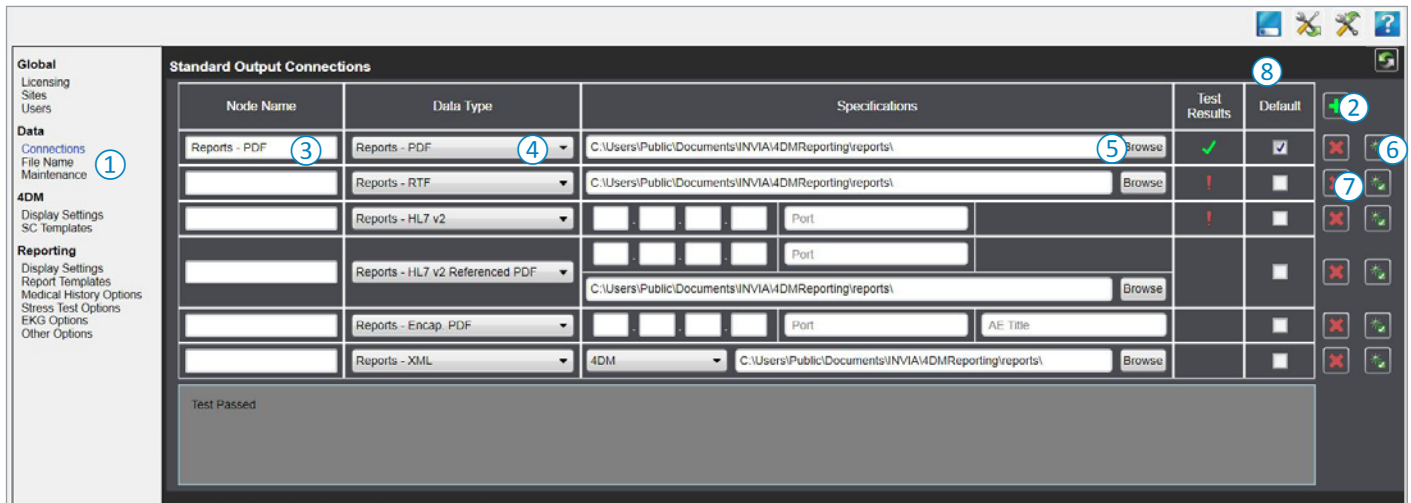
**PDF Option** – Used for structured reports where the text is locked and is ideal for distributing formatted documents.

**RTF Option** – Used for structured reports where the text is simple, formatted, yet allows for editing in Word.

**HL7 Option** – Used to transfer data elements from 4DM to your EMR or PACS (the EMR or PACS must have the ability to read HL7 formats).

**Encapsulated PDF Option** – Used for the storage of reports in PDF format within your DICOM Database.

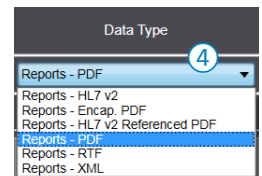
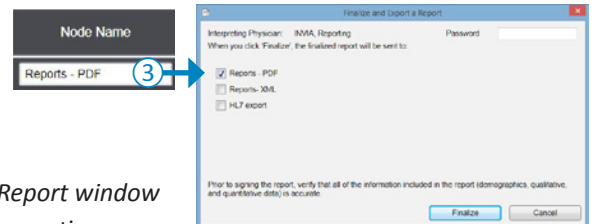
**XML Option** – Used for analytics and research, the user can export values from 4DM to a database.



To review and designate the export location and format for reports, perform the following steps.

**Within 4DM Administration:**

1. Locate and select the **Connections** page ①.
2. Use the **Standard Output Connections** section to display the default export location for finalized Word and PDF reports.
3. Click the **Add** ② button to create a new output connection.
4. To enter or modify an existing **Node Name** ③, click within the name field to make modifications.
  - The node name should be unique, as it will tell the user where they are exporting the report to.
  - The user will see this node name in the *Finalize and Export a Report* window after the physician selects the Sign/Finalize/Amend button in reporting.
5. Use the **Data Type** ④ drop-down menu to select or modify the type of data associated with the output connection.
6. For Word, PDF, and XML data types, click the **Browse** ⑤ button to select the **Specifications** for the export directory pathway. Users can also manually enter the export directory pathway by clicking in the **Specifications** field. XML output connections allow the user to specify the XML template used for export (i.e., 4DM, ASNC, Example Conversion, and Legacy).



- HL7 and Encapsulated PDF data types require the IP Address and Port specifications for the electronic medical or health records system to complete the connection.
7. Click the **Test** ⑥ button to confirm connectivity between each node. A green check mark will be present in the **Test Results** column if connectivity is successfully established. A failed connection node displays a red exclamation point and a diagnosis for the failure will be displayed in the gray box below the output connections.
  8. Click the **Default** toggle to designate the node as a default for the selected **Data Type**.
  9. To delete an output connection, click the **Remove** ⑦ button.
  10. Select the **Save** ⑧ button from the toolbar to retain the updates made to the Standard Output Connections.

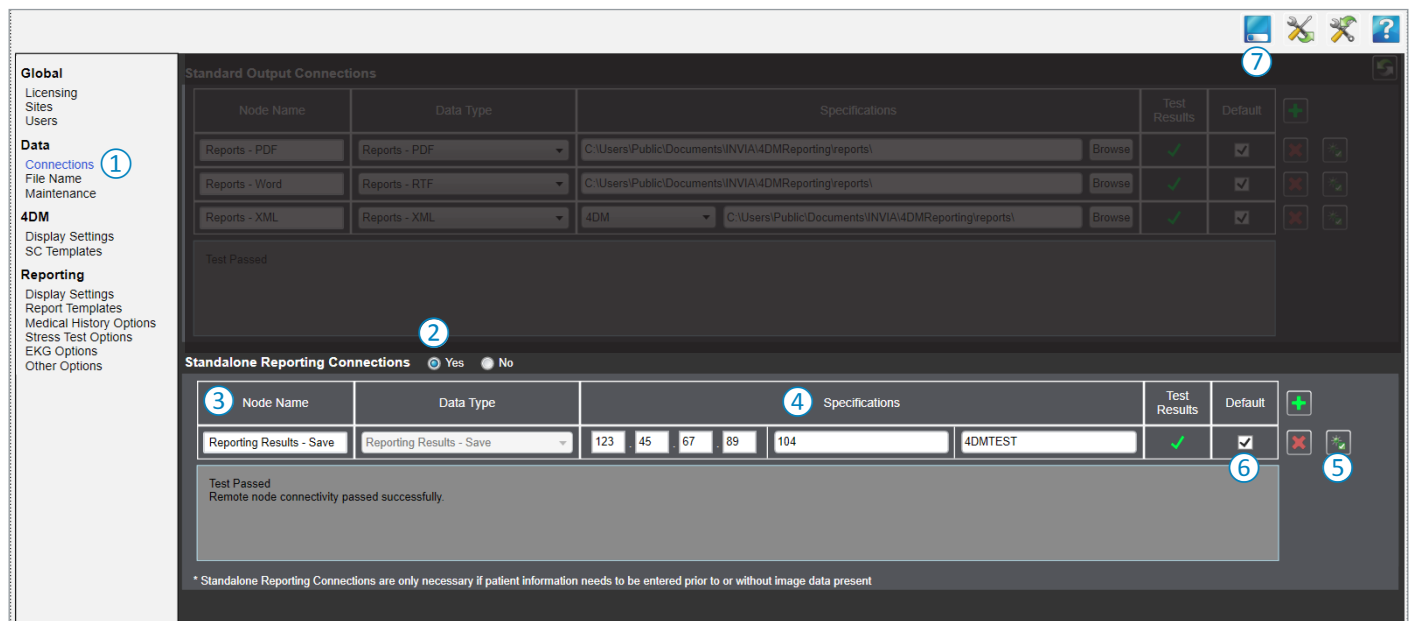
To add multiple connections repeat steps 3-7.

## Configuration for 4DM Personal

When beginning a report in the absence of image data, 4DM must have been configured to save the file containing the pre-imaging report to the same image database as the 4DM patient datasets are saved to. These connections are referred to as Standalone Reporting Connections on the Connections page and are only required when patient information will be entered prior to or without image data present.

When the pre-imaging report and the image data contain identical patient information (first and last name, ID, DOB, age, and sex), 4DM automatically combines both files into one. In the event the data is not entered in identically, refer to 4DM Personal's Patient Browser User Guide on how to use the merge patient tool to combine the files.

**Note:** 4DM Personal users must also configure at the minimum one Post-Imaging connection. Refer to the 4DM integrated instructions above.

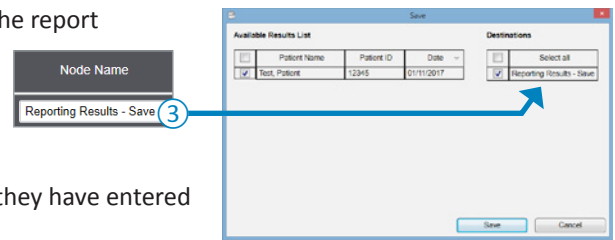


Within 4DM Administration:

1. Locate and select the **Connections** page ①.
2. **Standalone Reporting Connections** ② are turned off by default. Click the **Yes** radio button to display and configure the **Reporting Results – Save connections**.

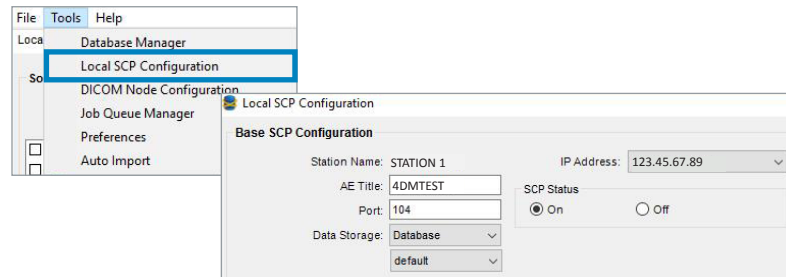
3. Click within the **Node Name** ③ field to enter a unique name for the report Connection or keep the defaulted name.

- The node name should be unique, as it will tell the user where they are saving the report to.
- The user will see this node name in the *Save window* after they have entered patient data and selected the **Save** button in reporting.



4. Enter the IP Address, Port, and AE Title ④ **Specifications**.

- For 4DM Personal, this information is found in the Patient Browser under **Tools** in **Local SCP Configuration**.
- Check to make sure the **SCP Status** is **On**.



7. Click the **Test** button ⑤ to confirm connectivity for the reporting connection node. A green check mark will be present in the **Test Results** column if connectivity is successfully established. A failed connection node displays a red exclamation point and a diagnosis for the failure will be displayed in the gray box below the output connections.
8. Click the **Default** toggle to designate the node as a default for the selected **Reporting Results - Save Node**.
9. To delete an output connection, click the **Remove** ⑥ button.
10. Select the **Save** ⑦ button from the toolbar to retain the updates made to the Standalone Reporting Connections.

# Chapter 2 Entering Patient Information

4DM Reporting offers physicians, Stress technologists, fellows, and other care-givers a safe and secure way to record patient information within the diagnostic workflow. This chapter expands on how to access 4DM Reporting, select templates for report creation, and enter patient information.

## Understanding 4DM Reporting

### Accessing 4DM Reporting

The 4DM Reporting module can be accessed from three different locations:

#### ① Accessing from within 4DM [For 4DM Integrated and 4DM Personal users]

1. Click **Reporting** from within the 4DM control panel to open 4DM Reporting.
2. 4DM Reporting opens with any previously saved patient information and imaging information displayed.



①

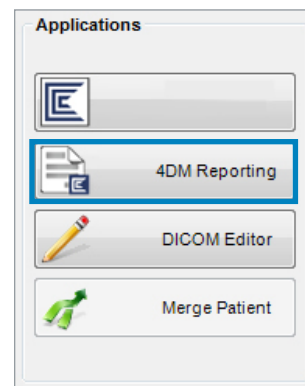
#### ② Accessing from 4DM Personal's Patient Browser [For 4DM Personal users]

Starting a blank report:

1. Do not select any patients within the Patient List.
2. Click the **4DM Reporting** button.
3. 4DM Reporting opens as a blank slate to begin entering patient information such as Demographics and Medical History.

Opening an existing report:

1. Select a patient within the Patient List.
2. Click the **4DM Reporting** button
3. 4DM Reporting opens with any previously saved patient information and imaging information displayed.



②

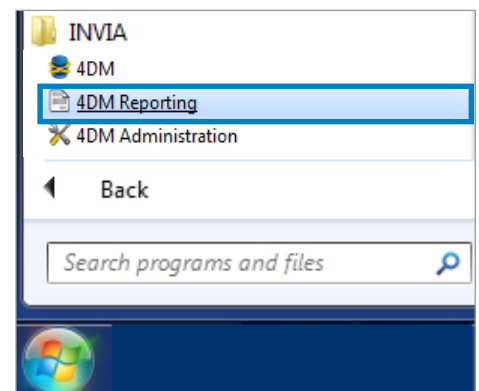
#### ③ Accessing from outside of 4DM [also known as "standalone" reporting]

Windows 7 and Windows 10 users:

1. Click the **Windows Start** menu.
2. Locate the **INVIA** folder and select **4DM Reporting** to open the 4DM Reporting module.
  - You can also use the **Search** box to locate and open **4DM Reporting**.

Windows 8 users:

1. On the keyboard, press the **Windows** key to open the main menu, then press the **C** key to display the **Windows Charm Bar**.
2. Click **Search** to display the Search Box.
3. In the Search Box, enter **4DM Reporting** and select to open the 4DM Reporting module.
4. **4DM Reporting** opens as a blank slate to begin entering patient information such as Demographics and Medical History.



③

## Navigating 4DM Reporting

The flow of Reporting is set-up in chronological order of a MPI study.

1. Input patient information.
2. Input stress test and imaging information.
3. Input Physician interpretations.
4. Finalize a report.

4DM Reporting defaults to display in dual-mode, displaying the **Demographics** data page and the **Preview** of the report.

**4DM SPECT, 001; 004-001,1D GS/R (Ischemic2) , 52 yrs, Male**

**Demographics**

**Patient Demographics**

Patient Name: 4DM SPECT, 001

ID: 004-001,1D GS/R (Ischemic2)

DOB: 03/13/1954

Age: 52

Gender: Male

Race: Caucasian

Ethnicity: Not Hispanic

Weight: 169.00 lbs

Height: 68.00 in

BSA: 1.91 m<sup>2</sup>

BMI: 25.8 kg/m<sup>2</sup>

**Report: Preliminary**

Patient Name: 4DM SPECT, 001

Study Date: 03/09/2007

Patient ID: 004-001,1D GS/R (Ischemic2)

Referring Physician: John Doe, MD

Age Sex: 52 yo / Male

Reporting Physician: Test Report, MD

Height: 68.00 in

Weight: 169.00 lbs

BSA: 1.91 m<sup>2</sup>

**INDICATIONS:** Chest pain,

**STRESS PROTOCOL:** Exercise

The patient was exercised on a treadmill for 10 minutes at stage IV of the Bruce protocol, for a total exercise duration of 10.0 minutes. The patient achieved a maximal workload of 11.3 METs, functional class I. Exercise was discontinued due to moderate to severe angina. The patient's heart rate increased from 97 bpm at rest to 133 bpm at peak stress, 79% of age predicted maximum. The patient's blood pressure at rest was 134/98 mmHg and increased to 170/105 mmHg at peak stress for a rate-pressure product of 22510. Blood pressure response was normal. Chest pain symptoms consistent with typical angina occurred.

**STRESS TEST FINDINGS:** Adequacy of Stress: Sub-maximal

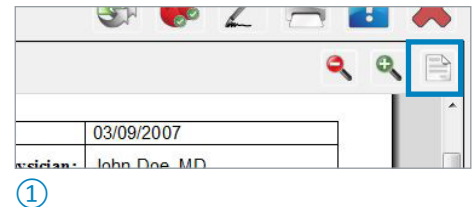
	STRESS EKG Data	REST EKG Data
Test Status	Abnormal	Abnormal
Rhythm	sinus tachycardia	normal sinus rhythm
AV Block	none	none
IV Conduction	normal	normal
Arrhythmias	APCs	none
ST Response	Stress ST response was 1.4mm ST depression (mildly positive) in the inferior, lateral, and inferolateral leads during stress and recovery.	
Reperitization	nonspecific ST-T changes (NSSTTCB)	

**IMAGING PROTOCOL:** Gated Stress Tc-99m Sestamibi / Static Rest Tc-99m Tetrofosmin

Rest imaging was performed with the patient in the supine position approximately 124 minutes following the intravenous injection of 18.2 mCi of Tc-99m Tetrofosmin. Stress imaging was performed, 38.1 mCi of Tc-99m Sestamibi were injected intravenously approximately one minute prior to the termination of Exercise stress. The heart was imaged with the patient in the supine position approximately 37 minutes post-injection.

To hide the preview of a report in-process, select the **Preview** tool.

- If using a dual screen mode, the preliminary report will appear in the right half of the screen displayed. If using single screen mode, a preview of the report will appear on the entire screen. For further information on screen modes, refer to [Optimizing Display Settings for Multi-Monitors or Tablets](#).



At any point a report can be saved to complete at a different time or location. Note that if the user exits the file without saving, all entries for that session will be lost.

Note that fields required for final report creation are highlighted in red.

**4DM SPECT, 001; 004-001,1D GS/R (Ischemic2) , 52 yrs, Male**

**Demographics**

**Medical History**

Indications: Chest pain

Cardiac Risk Factors: Hypertension, Age

Medications - Daily: Beta Blocker, Ca++ Blocker

Medications - Day of Test: Click to see options/type text

Cardiac Event History: Click to see options/type text

Pre-test Chest Pain:
 

- None
- Non-cardiac
- Substernal chest pain or discomfort
- Provoked by exertion or emotional distress
- Relieved by rest and/or nitroglycerin

Type of Chest Pain: Typical angina

Anginal Equivalent:  Yes  No

Pre-test Probability of CAD: 96%

Prior Diagnostic Test:  None  Exist  Unknown

## Using Application Controls

The **global** toolbar contains buttons that are active throughout the entire navigation process. The toolbar is located on the top right of the 4DM Reporting Interface and there are seven tools available:



**Save** (available in *standalone* reporting only): Writes out Reporting data as the default format with the default name.



**Reset All:** Resets the information on all data pages to the initial default values.



**Set All Normal:** Specifies that all values be set to normal on all data pages.



**Finalize/Amend/Export:** Allows the user to export and sign to finalize or amend a report.



**Print:** Opens a print window to print the current report.



**Help:** Activates the Help window. The Reporting User's Guide is available here.



**Quit/Exit:** Closes 4DM Reporting.

The **local** tools are only active on specific pages. These display in the upper-right portion of the page, beneath the global toolbar:



**Template Selector:** The template selector button is to the left of the template name. The Template Selector window opens when the user clicks the button. It prompts the user to select the Site of the study and a template.



**Reset:** Resets the information on the data page to the initial default values.



**Set Normal:** Specifies that values be set to normal on that data page.



**Preview:** Toggles between showing and hiding the report preview page.



**Zoom In:** Increases the magnification ratio of the Preview page by 10%



**Zoom Out:** Reduces the magnification ratio of the Preview page by 10%

Additionally, there are several tools that display within certain pages. Some of these tools include:



**Auto-Text:** When activated, this text box automatically generates sentences based on selected fields within a page. If a user begins to type sentences within the text field, **Auto-Text** will switch to **Free Text**.



**Free Text:** When activated, this text box enables text to be manually entered by typing the necessary information. If a user toggles back to **Auto-Text**, the text field will automatically populate based selections from that page.



**Date Selector:** Provides a month to select a date from.



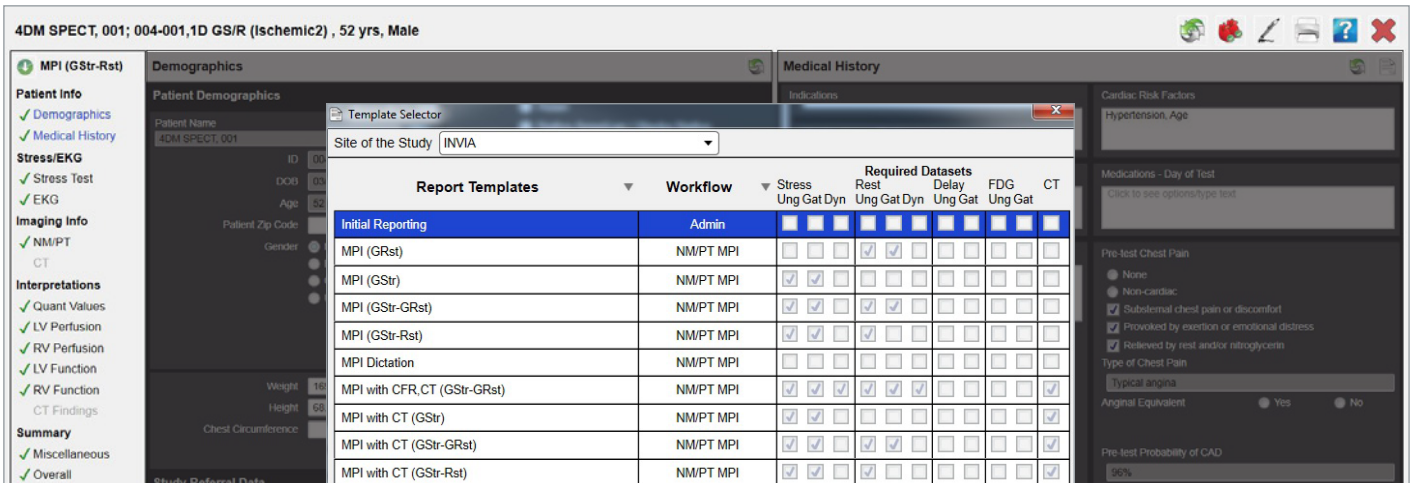
**Injection Dose Calculator:** Opens a window to aid with the injection dose calculation.



**Administration Login:** Opens the 4DM Administration.

## Select the Template for Report Creation

4DM Reporting includes multiple template choices available in English, French, and German to provide users a simple way of configuring report templates without having to create them. The default templates contain the basic reporting requirements defined by the ASNC Reporting Guidelines. The section guides the user on how to select the default report templates when entering patient information.



### Report Template Selection

Before entering patient information, verify that the preferred report template for the interpreting location is selected ①.

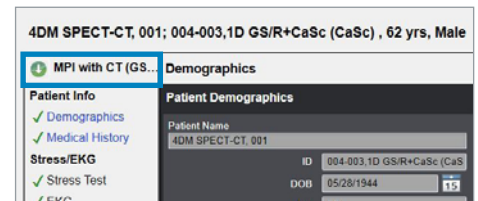
- When 4DM Reporting is accessed through 4DM, it auto-selects the report templates based on the patient study.
- When 4DM Reporting is accessed from outside 4DM (*standalone*), a default template is auto-selected.

Use the Template Selector tool to ensure the correct site is selected. Sites available to the user are viewable in the drop-down. For organizations with multiple sites, Report Templates are set-up and assigned to particular sites.

To override a selected template, within **4DM Reporting**:

1. Click the **Template Selector** tool ② at the top of the page.
2. Select **Site Name** from the dropdown menu ③.
3. **Highlight** the appropriate template in the Template Selector window ④.
4. Click the **Select** ⑤ button to open the template.

**Note:** Users can edit existing templates or create new templates. To customize your template with logos, headers and footers, formatting text, or report tags refer to [Editing Report Templates](#).



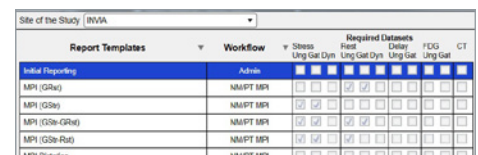
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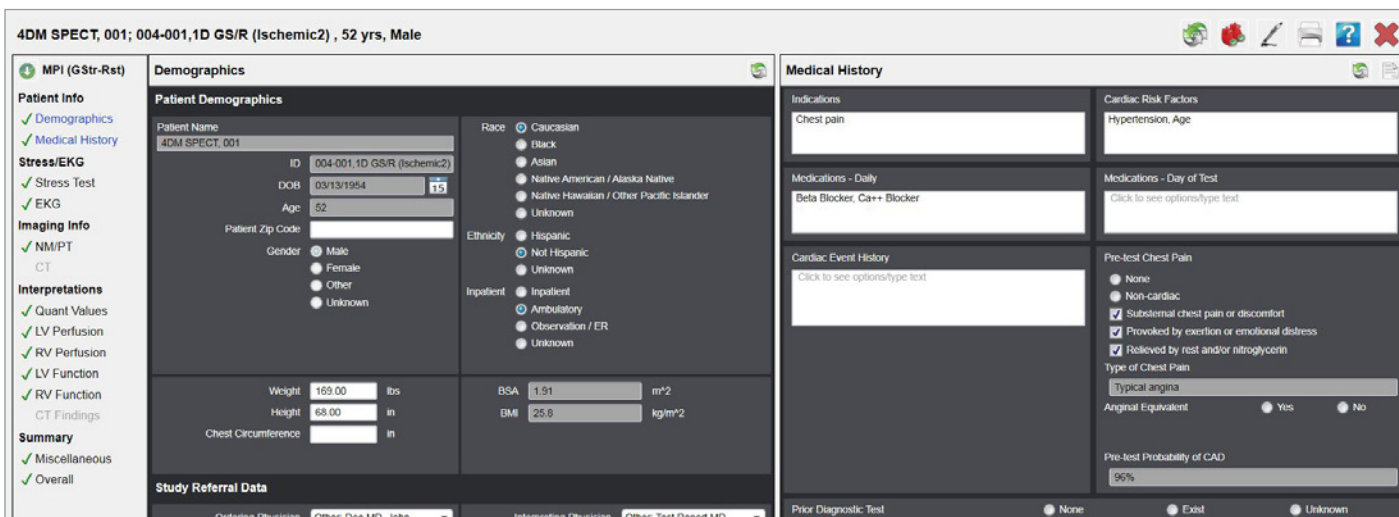
⑤

# Populate Patient Information

There are two ways patient information populates in 4DM Reporting. When starting a report without image data, the patient information can be manually entered into the report. After the study is acquired, the image data and patient information can be combined into a single report. When the patient study is acquired first, the patient information and image data auto-populate into a single report. Additional patient information is manually entered as required.

The Patient Information pages consist of three sections:

- Patient Demographics
- Study Referral Data
- Medical History



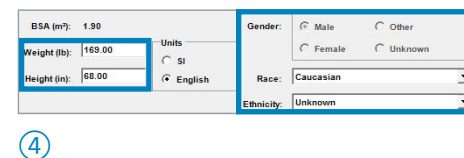
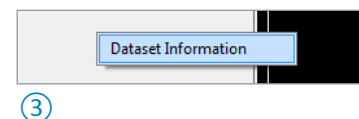
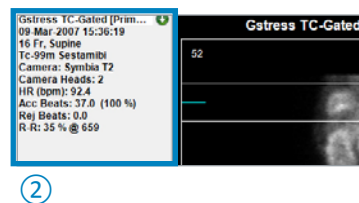
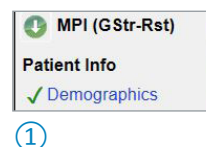
## Demographics and Medical History

Within 4DM Reporting:

1. Select the **Demographics** ① page and enter the patient demographics
  - **Fields that are editable** will appear white.
  - **Fields that are not editable** will appear grey. These fields are imported from the DICOM image file, or fields automatically calculated based on user input (e.g. BSA and BMI).
  - **Fields that are bidirectional:** Gender, Weight, Height, Race, and Ethnicity.
    - > If using 4DM Reporting from within the 4DM application, these fields are always synchronized between the two.

To edit the bidirectional fields, within 4DM:

1. Right-click in the **Dataset Information** panel ②.
2. Select **Dataset Information** ③.
3. In the Reporting section, edit the patient demographics to change the fields in 4DM Reporting ④.



## Study Referral Data

Within **4DM Reporting**:

1. On the **Demographics** page, locate the **Study Referral Data** section
2. Select the desired **Referring Physician** and **Interpreting Physician** ① using the dropdown menus.
  - a. To quickly add an Ordering, Referring, or Interpreting Physician, select **Other** ② using the dropdown menu.
  - b. Enter physician information into the New Physician window and select **OK** ③ to save the information.

**Note:** This is a “quick add” only available for selection in the current session report. Physician information entered will not be saved for future selections. To permanently add Ordering, Referring, or Interpreting Physicians, refer to [Configuring Reporting for Use](#).

3. Other optional fields available include: **Ordering Physician, Patient Accession Number, Procedure ID, Procedure Step ID, Insurance Payer, Board Certification, Subspecialty Certification, Other Interpreters, and Appropriate Use Criteria.**

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## Medical History

Within **4DM Reporting**:

1. Select the **Medical History** ① page.
2. Click the **Indications** ② box to expand the list of primary/secondary indications to select or type.
3. Select the **Primary Indication** using the radio-toggles or by typing.
4. Select the **Secondary Indication** using the check-boxes or by typing.
  - The primary indication must be entered before the secondary indication.
5. Click the **Cardiac Risk Factors** ③ box to select from the list of risk factors to or type in your own.
6. Click the **Cardiac Event History** ④ box to select cardiac events or type in your own.
7. Specify the Date of the Cardiac Event using the **Date Selector** ⑤ tool.

**Note:** To customize the list of terms in the drop-down menus, refer to [Customizing the User Interface](#).

Other optional **Medical History** fields include:

1. **Medications – Daily** box
2. **Medications – Day of Test** box
3. **Type of Chest Pain** is auto-populated based on the user’s selections in the **Pre-test Chest Pain** ⑥ section. The types consist of the following:

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Type of Chest Pain	Pre-test Chest Pain
Asymptomatic	None, or None-cardiac
Non-anginal chest pain	Any one check box
Atypical angina	Any one check box
Typical angina	All three check boxes

4. **Pre-test Probability of CAD** ⑦ is automatically calculated based on **Age, Gender, Type of Chest Pain, and ST Segment Response**.
5. If the patient has a prior cardiac diagnostic test, select **Exist** in the **Prior Diagnostic Test** section. When selected, a table appears below ⑧:
  - a. Enter **Test** performed, **Date** performed, and **Result** using the dropdown menus or **Date Selector** tool.
  - b. To add multiple entries, use the **Add +** tool.
  - c. To delete entries, use the **Remove x** tool.
6. Select the **Save** ⑨ tool in the toolbar to save the patient information.

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## Entering Stress Test and EKG Information

4DM Reporting simplifies creating a report for a stress test with a variety of standard stress-test protocols to choose from.

To add EKG data from GE MUSE systems to your report, use the EKG Viewer screen in 4DM to view and copy EKG data into 4DM Reporting. For more information on this, refer to the [EKG section](#).

### Stress Test

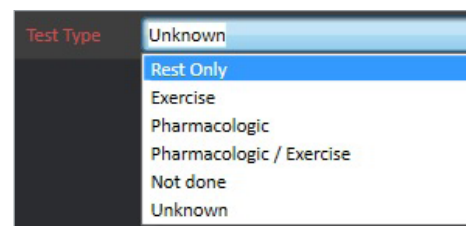
Within **4DM Reporting**:

1. Verify that the preferred report template for the interpreting location is selected ①.
2. Select the **Stress Test** ② page.

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- Select the **Test Type** ③ dropdown menu. Six test types are available:
  - Exercise
  - Pharmacologic
  - Pharmacologic/Exercise
  - Rest only
  - Not Done
  - Unknown
- Fill in the fields using the dropdown menus, check boxes, or by typing. Some fields are only available when a certain medication or symptom is selected.
  - The **Pharmacologic** and **Exercise Stress Protocols** default to the parameters configured in 4DM Administration. To change the defaults, refer to [Customizing the User Interface](#). These protocols can be also changed individually on a case-by-case basis on the Stress Test page.
  - If the **Auto-Text** tool is turned on, the **Stress Test Protocol** and **Stress Test Findings** text boxes ④ are automatically populated as fields are populated. If a user begins to type sentences within the text box, **Auto-Text** will switch to **Free Text**.
    - > To delete all information in the text box, click the **Clear** button.
- Select **Save** ⑤ in the toolbar, to save **Stress Test** patient information when the required fields are completed.



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## EKG

Before entering EKG information to your report, you must first activate the **EKG Viewer** screen in **4DM** and review EKG information prior to copying it over to 4DM Reporting.

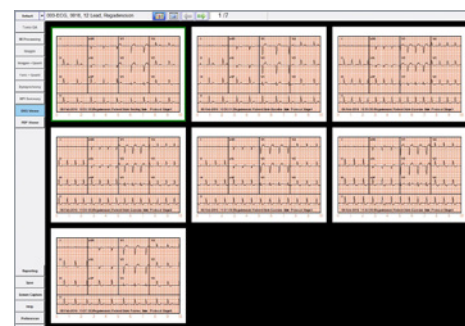
Within **4DM**:

- The EKG Viewer screen facilitates a streamlined reporting workflow, permitting review of image data as well as EKG's from within 4DM. The EKG Viewer screen displays 12-Lead and General EKG Waveforms from EKG systems capable of sending data in DICOM format ① (See your EKG system vendor to check for compatibility with 4DM).
- By default, the EKG Viewer screen is not in the active workflow list.

To activate the EKG Viewer screen, perform the following.

- Click **Preferences**.
- Within **Screen Layout**, locate **Inactive Screens**.
- Scroll through the list of Inactive Screens, and click **EKG Viewer**.
- Click **Activate**.
- Click **Save**.

On the **EKG Viewer** screen, waveforms will display in the order of the EKG Strip Chart and can be viewed in **Thumbnail Mode** or **Full Screen Mode**. Use the **EKG Toolbar** ② to perform functions such as zooming, navigating through EKG pages, and creating measurements.



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**Thumbnail Mode Tool:** Displays EKG's as thumbnails, up to 9 display at a time. If more than nine pages of EKG waveforms are present, a slider appears on the right side of the screen to permit scrolling to other pages.



**Full Screen Mode Tool:** Enlarges the display of the selected EKG Waveform page. Review, zoom, and create measurements on EKG's in this mode.



**Previous/Next Page Tool:** Click to page through EKG Waveforms, using the right-arrow to advance and the left arrow to go back to the previous page.



**Page Number Text Box:** Shows the currently selected page. Click and type in a desired page to display as an alternative to using the Page Tool or double-clicking directly on pages.



**Magnification Tool:** Available in Full-Screen Mode. Adjusts the EKG size. Click the arrow next to the icon to use the slider for custom zooms.



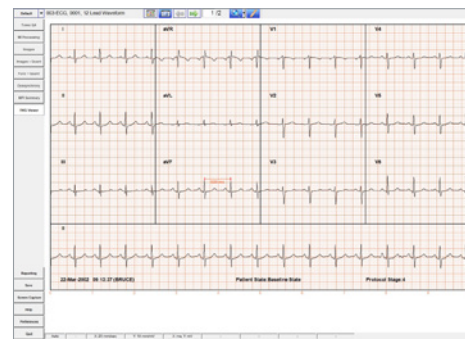
**Ruler Tool:** Available in Full-Screen Mode. Use to create vertical measurements for amplitude (in mV); and horizontal measurements for time (in ms).

In **Full Screen Mode** ③, the **Magnification** and **Ruler** tools are available, permitting zoom and measurements on the EKG Waveforms. EKG's can be measured by voltage amplitude (vertical) in millivolts (mV) and time interval (horizontal) in milliseconds (ms).

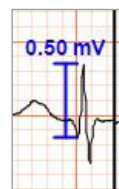
To draw a measurement:

1. Click the **Ruler** tool in the toolbar to activate it.
2. On the graph, vertical or horizontal straight line measurements are allowed. Left-click and drag to **create** the measurement.
  - The new measurement will appear in orange with red start/endpoints. The measured value and unit displays under the measurement.
3. To **complete** the measurement, click anywhere in the EKG screen and the measurement font will change to blue.
  - Vertically ④, each small box represents 0.1 mV, and each large block (made up of 5 small boxes) represents 0.5 mV.
  - Horizontally ⑤, each small box equals 0.04 seconds (40 ms), and each large block (made up of 5 small boxes) represents 0.2 seconds (200 ms) (Figure 3.72).
4. To **move** a measurement after it is drawn, place the cursor on the line (but not on a handle), and when the cursor changes to the panning (hand tool), left-click and drag it to the desired location on the graph.
  - Updates to the measurement length are made by clicking on the handles, and clicking and dragging it to the desired length.
5. To **delete** any measurement, right-click on it to access the menu and select Delete. Also available from the right-click menu are Undo Add, and Redo Delete.

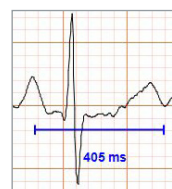
The Status Bar ⑥ along the bottom of the 4DM application provides reference information as follows, left to right:



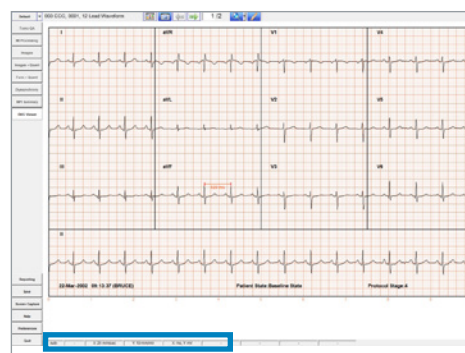
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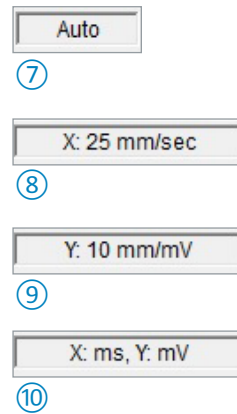


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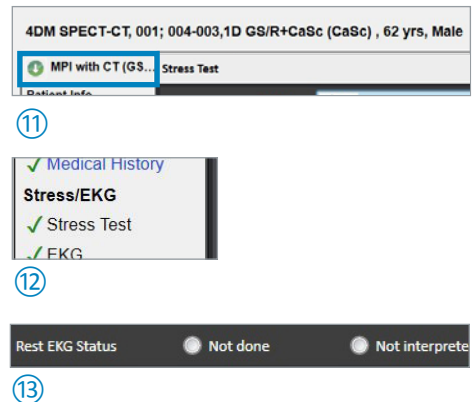
- **Magnification** setting ⑦: “Auto” notes that 4DM is automatically magnifying the EKG to fit to the display area.
- **Intentionally left blank.**
- **Displays the X calibration setting in mm/sec** ⑧. Standard setting is X: 25 mm/sec.
- **Displays the Y calibration setting in mm/mv** ⑨. Standard setting is Y: 10 mm/mV.
- **Displays the units** ⑩: X: ms, Y: mV.



Once the EKG data has been reviewed within 4DM, the user can return to the EKG page within 4DM Reporting and continue the report.

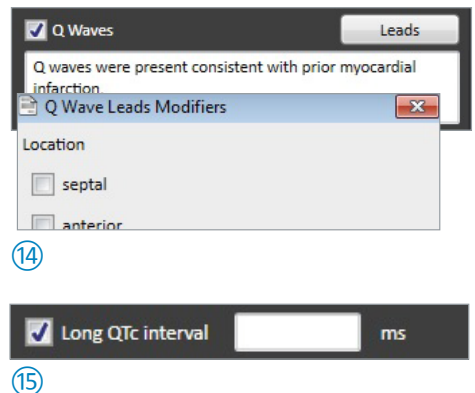
**Within 4DM Reporting:**

1. Verify that the preferred report template with (for) the interpreting location is selected ⑪.
2. Select the **EKG** ⑫ page
3. Select the **Rest EKG Status** ⑬ radio button. Four status types are available:
  - Not done
  - Not interpreted
  - Normal
  - Abnormal

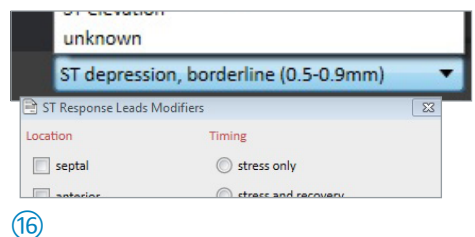


**Note:** The display of the available EKG fields depends on the EKG Status selected.

4. Fill in all available fields using the dropdown menus, check boxes, or by typing.
  - If **Normal** is selected, all fields will be set to normal, and are editable.
  - If the user selects the **Q Waves** or the **Long QTc interval** check box, the Rest EKG Status will switch to **Abnormal**.
    - > Select the **Q Waves** ⑭ check box to open the Q Wave Leads Modifiers window for setting the location.
    - > Select the **Long QTc interval** ⑮ check box to make the time in milliseconds field available.



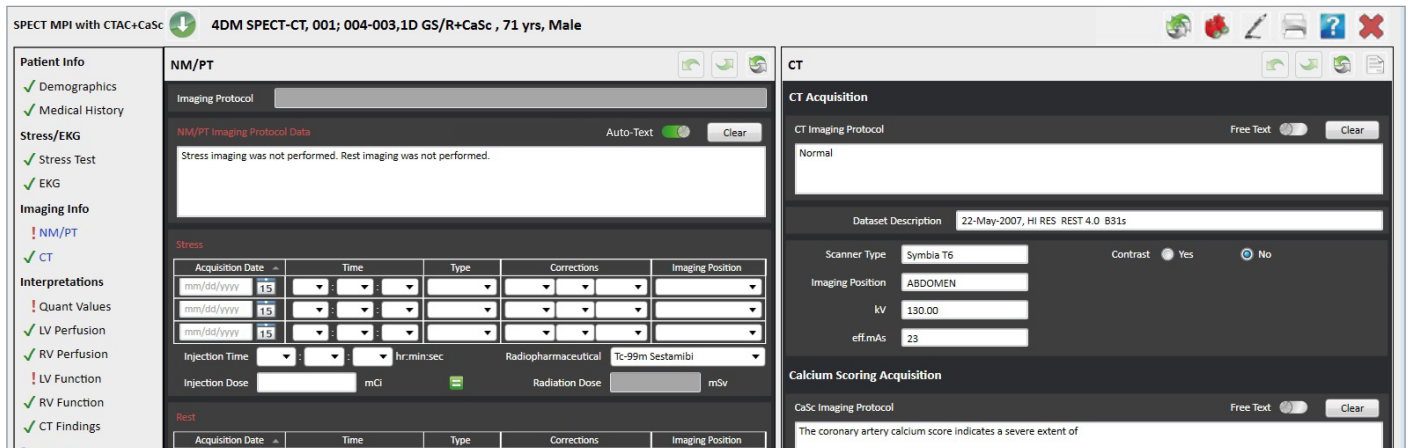
5. If **Auto-Text** is selected, sentences will generate in the **Rest EKG Findings** field based on EKG parameters selected.
6. Repeat steps 1-3 above for **Stress EKG status**.
7. Select the **ST Response/Interpretation** ⑯ dropdown menu to select an ST Interpretation or ST Response option.



8. In the **ST Response Leads window**, set the location and timing of the leads.
9. Click within the **ST Response/Interpretation** field to free text.
10. Select the **Save** ⑰ tool in the top toolbar, to save EKG patient information when the required fields are completed.



# Imaging Protocols



## NM/PT

Within the NM/PT page verify and enter data related to the nuclear imaging test for each dataset.

Within **4DM Reporting**:

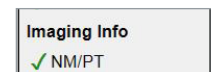
1. Verify that the preferred report template for the interpreting location is selected ①.
2. Select the **NM/PT** ② page to enter the nuclear acquisition parameters.
3. Enter the **Injection Time**, **Injection Dose**, and **Radiopharmaceutical** ③ under the **Stress** and **Rest** Data Table(s).
4. Verify the acquisition protocol(s) acquired display in the **Imaging Protocol** ④ field.
  - The protocol is populated based on the **Injection Time** and **Dose** and cannot be changed.
5. Verify **Auto-Text** in the **NM/PT Imaging Protocol Data** ⑤ field is activated to generate sentence structures based on the Injection Time, Dose, and Radiopharmaceutical entered under the **Stress** and **Rest** Data table(s). Click in the NM/PT Imaging field to edit the existing sentence(s) or to free text.
6. Verify the following acquisition parameters in the **Stress** ⑥ and **Rest** table(s) auto-populated from the DICOM image file:
  - Acquisition Date
  - Time
  - Type
  - Corrections
  - Imaging Position
  - Injection Time
  - Injection Dose
  - Radiation Dose (Optional)

**Note:** When starting a report without any image data, the acquisition parameters can be manually entered into the report.

7. Select **Save** ⑦ in the toolbar, to save EKG patient information when the required fields are completed.



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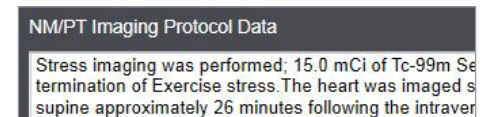
②



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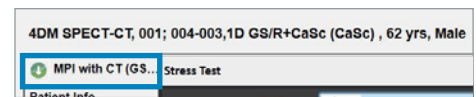
⑦

## CT

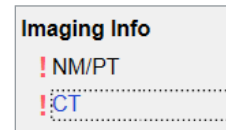
When a Computed Tomography (CT) acquisition is acquired for Attenuation Correction (AC), review of incidental findings, or for Calcium Scoring (CaSc) use the CT page to verify and enter CT acquisition parameters.

Within **4DM Reporting**:

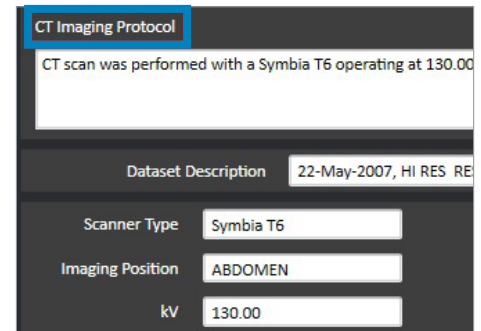
1. Verify that the preferred report template for the interpreting location is selected ①.
2. Select the **CT** ② page to verify and enter CT data.
3. Verify the following CT acquisition parameters in the **CT Imaging Protocol** ③ section auto-populated from the DICOM image file:
  - Dataset Description
  - Scanner Type
  - Imaging Position
  - kV
  - eff.mAs
4. Select the **Yes** or **No** ④ radio button for **Contrast** imaging. If contrast was injected, manually enter the following fields:
  - Contrast Volume
  - Infusion Rate
  - Infusion Start Time
5. Verify **Auto-Text** in the **CT Imaging Protocol** ⑤ field is on to generate sentence structures based on the CT acquisition parameters. Click in the **CT Imaging Protocol** field to edit the sentence(s) or to free text.
6. Select **Save** ⑥ in the top toolbar, to save CT data when the required fields are completed.



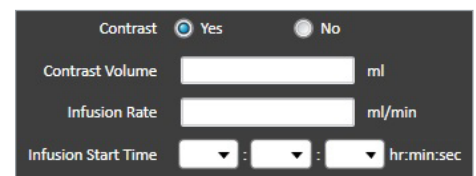
①



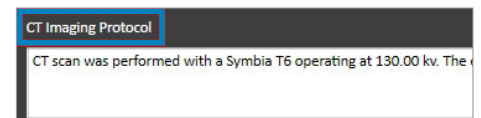
②



③



④



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# Chapter 3: Physician Report Review

## Overview

4DM integrates recording patient information within the diagnostic workflow. This streamlined process can help you improve the efficiency and effectiveness of your daily routine. While performing your perfusion, function, and quantitative review of a patient study, you can enter your findings directly into a report.

**4DM SPECT, 001; 004-001,1D GS/R (Ischemic2) , 52 yrs, Male**

**MPI (GStr-Rst)**

**Patient Info**

- ✓ Demographics
- ✓ Medical History

**Stress/EKG**

- ✓ Stress Test
- ✓ EKG

**Imaging Info**

- ✓ NM/PT
- CT

**Interpretations**

- ✓ Quant Values
- ✓ LV Perfusion
- ✓ RV Perfusion
- ✓ LV Function
- ✓ RV Function
- CT Findings

**Summary**

- ✓ Miscellaneous
- ✓ Overall

**Quant Values**

**LV Perfusion**

Region	Extent (%)		
	Stress	Rest	Ischemia
LAD	57	0	56
LCX	10	0	10
RCA	12	0	12
Total	39	0	39

**LV / RV Function**

LV	Stress
EDV (ml)	99.0
ESV (ml)	31.0
TID	1.29
EF (%)	69

**LV Perfusion**

Traditional  Score maps  Dictation

LV Perfusion Summary:  Normal  Abnormal (  Ischemia  Intarction )  Uninterpretable

TID: 1.29

Findings: Abnormal suggestive of multi-vessel ischemia

Defect: Large sized  severe  apical, anterior, septal, anteroapical

completely reversible  defect consistent with

ischemia  in the territory typical of the

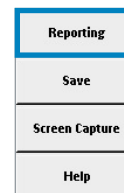
mid and distal  LAD

(1) Large sized, severe, apical, anterior, septal, and anteroapical, completely reversible defect consistent with ischemia in the territory typical of the mid and distal LAD.

Consistent with  vessel disease

Within **4DM**:

- Click on the **Reporting** ① button from the Control Panel.
  - If using a dual-monitor system, 4DM Reporting launches on the second screen.



①

Within **4DM Reporting**:

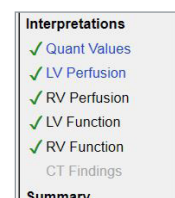
- Verify that the preferred report template for the interpreting location is selected ②.
- To override the selected template, click the **Template Selector** ③ tool.
- Review patient information previously entered and modify if necessary.
- When review is complete, proceed to the remaining **Interpretations** ④ pages.



②



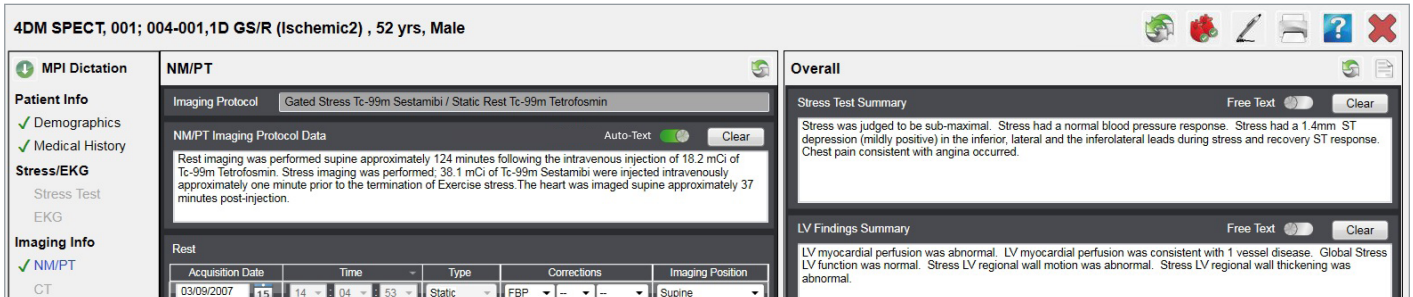
③



④

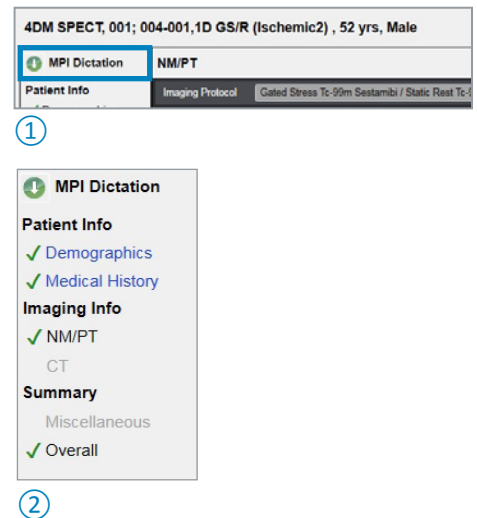
## Using Dragon with 4DM Reporting

Dragon speech-recognition software is used for fast dictation of patient reports. 4DM is fully compatible with Dragon, though Dragon must be purchased separately. Any field or text box in a report can now be populated via dictation. An MPI Dictation template is provided for optimal efficiency.



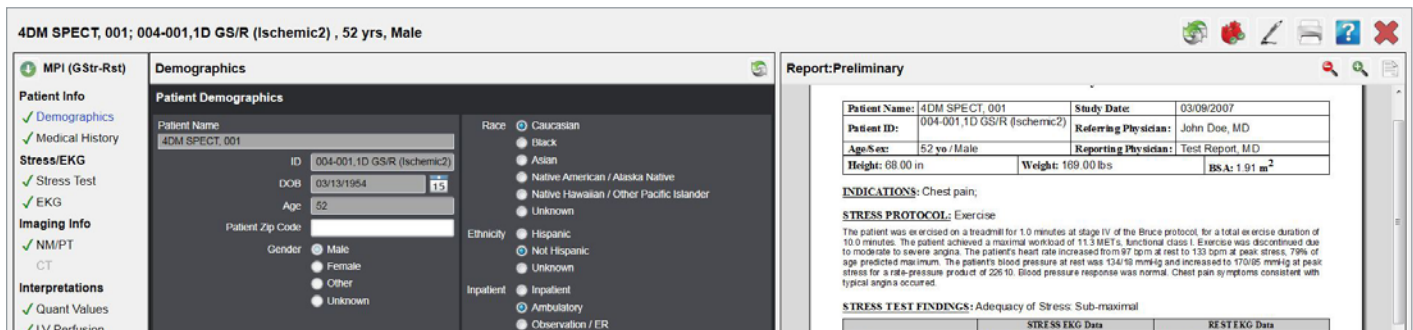
### Within 4DM Reporting:

1. Verify that the preferred report template for the interpreting location is selected ①, in this case: **MPI Dictation**.
2. When the dictation template is selected, four pages in the navigation panel ② are activated.
  - Demographics
  - Medical History
  - NM/PT
  - Overall
3. Turn on the dictation device and use the keyboard or mouse to navigate to the required fields.
4. To delete all information within any text box, select the **Clear** button.



## Verify Data in a Preliminary Report

Streamline your review process by reviewing the Preliminary Report while entering your findings directly into 4DM Reporting.



### Within 4DM Reporting:

1. Click the **Preview** ① tool to display the Preliminary Report of data entered by the technologists.



- Review Patient Information, Stress/EKG, and Imaging Protocol Information to verify accuracy.
- Select the **Demographics, Medical History, Stress Test, EKG, NM/PT, or CT** page using the navigation panel to edit information.
- When a change is made, the preview preliminary report will update automatically ②.

Patient ID:	004-001,1D GS/R (Ischemic2)	Referring Physician:	John Doe, MD
Age/Sex:	52 yo / Male	Reporting Physician:	Test Report, MD
Height:	68.00 in	Weight:	169.00 lbs
		BSA:	1.91 m <sup>2</sup>

**INDICATIONS:** Chest pain;  
**STRESS PROTOCOL:** Exercise  
 The patient was exercised on a treadmill for 10 minutes at stage IV of the Bruce protocol, for a total exercise duration of 10.0 minutes. The patient achieved a maximal workload of 11.3 METs, functional class I. Exercise was discontinued due to moderate to severe angina. The patient's heart rate increased from 97 bpm at rest to 133 bpm at peak stress, 79% of age predicted maximum. The patient's blood pressure at rest was 134/86 mmHg and increased to 170/95 mmHg at peak stress for a rate-pressure product of 22910. Blood pressure response was normal. Chest pain symptoms consistent with typical angina occurred.

STRESS TEST FINDINGS: Adequacy of Stress: Sub-maximal		
	STRESS EKG Data	REST EKG Data
Test Status	Abnormal	Abnormal
Rhythm	sinus tachycardia	normal sinus rhythm
LV Block	none	none
LV Conduction	normal	normal
ST-T/QT/QTc	ABN	none

②

## Enter Clinical Findings

While performing perfusion, function, and quantitative review of a patient study, enter your findings directly into 4DM Reporting.

The screenshot displays the 4DM Reporting interface for a patient study. The main window is titled "4DM SPECT, 001; 004-001,1D GS/R (Ischemic2) , 52 yrs, Male". On the left is a navigation panel with sections: Patient Info (Demographics, Medical History), Stress/EKG (Stress Test, EKG), Imaging Info (NM/PT, CT), and Interpretations (Quant Values, LV Perfusion, RV Perfusion, LV Function, RV Function, CT Findings). The main area is divided into two columns: LV Function and RV Function. Each column contains dropdown menus for Stress Function, Regional Wall Motion, and Regional Wall Thickening, along with quantitative metrics (EF, ED Volume, ES Volume, Subjective Volume) and circular wall motion/thickening maps. The LV Function section shows "Normal" for Stress LV Function, "Vascular" for Regional Wall Motion, and "Vascular" for Regional Wall Thickening. The RV Function section shows "Normal" for Stress RV Function, "Global/Uniform" for Regional Wall Motion, and "Global/Uniform" for Regional Wall Thickening. A toolbar at the top right includes icons for home, refresh, edit, print, help, and close.

- Enter diagnostic findings using Dragon dictation, free text, check boxes, or dropdown menus for each of the following sections in **4DM Reporting**:

### Stress/EKG ①

- Stress Test Findings
- Rest and Stress EKG Findings

**Stress/EKG**

✓ Stress Test

✓ EKG

①

### Interpretations ②

- LV Perfusion
- RV Perfusion
- LV Function
- RV Function
- CT Findings

**Interpretations**

✓ Quant Values

✓ LV Perfusion

✓ RV Perfusion

✓ LV Function

✓ RV Function

CT Findings

②

### Summary ③

- Overall Study Quality
- Extra-cardiac Activity
- Study Quality Artifacts
- Scan Significance

**Summary**

✓ Miscellaneous

③

- When the entire patient study is normal, select the **Set All Normal** ④ tool in the toolbar to set all sections to normal.

The screenshot shows the toolbar from the 4DM Reporting interface. The toolbar contains icons for home, refresh, edit, print, help, and close. The 'Set All Normal' tool, represented by a red apple icon, is highlighted with a blue border.

④

## Modify Quantification Values Imported from 4DM

The Quant Values page permits the user to enter quant values or modify the quant values imported from the 4DM Application. The tables displayed will vary based on study protocol suggested by the template selected.

SPECT MPI (GStr-Rst) test  **4DM SPECT, 001; 004-001,1D GS/R (Ischemic2) , 52 yrs, Male**

**Patient Info**

- ! Demographics
- ✓ Medical History

**Stress/EKG**

- ✓ Stress Test
- ✓ EKG

**Imaging Info**


- ✓ NM/PT
- CT

**Interpretations**

- ✓ Quant Values
- ✓ LV Perfusion
- ✓ RV Perfusion
- ✓ LV Function
- ✓ RV Function
- CT Findings

**Summary**

- ✓ Miscellaneous
- ✓ Overall

**Quant Values** 

**LV Perfusion**

Region	Extent (%)		
	Stress	Rest	Ischemia
LAD	58	0	56
LCX	10	4DM Value: 57 %	10
RCA	12	0	12
<b>Total</b>	<b>39</b>	<b>0</b>	<b>39</b>

**LV / RV Function**

LV	Stress
EDV (ml)	99
ESV (ml)	31
TID	1.38
EF (%)	69

Within **4DM Reporting**:

1. Select **Quant Values** ① to review the tables populated from 4DM quantification values.
2. Click and edit the fields within the table.
  - When a new value is entered, the box will be highlighted green. To view the original 4DM value, hover your mouse over the text box and a tool tip will display ②.
  - > Note: The Quant Value in a final report will display as “Visual \_\_\_%”, meaning it is inconsistent with 4DM Quantification.
  - The values within the table auto-populate certain fields on the **4DM Perfusion** and **Function** screens.
3. When finished reviewing the Quant Value page, proceed to the remaining Interpretations pages.
  - > Note: Some fields can only be edited on the Quant Values Page, such as: TID, EF%

**Interpretations**

- ✓ Quant Values
- ✓ LV Perfusion

①

Region	Extent (%)	
	Stress	Rest
LAD	58	0
LCX	10	4DM Value: 57 %
RCA	12	0

②

## Modify Polar Map and Wall Motion Scores

The LV Perfusion and Function data pages auto-populate if using 4DM Integrated Reporting or the patient file loaded in Reporting contains imaging data.

### LV Perfusion

4DM SPECT, 001; 004-001,1D GS/R (Ischemic2) , 52 yrs, Male

**MPI (GStr-Rst)**

**Patient Info**

- ✓ Demographics
- ✓ Medical History

**Stress/EKG**

- ✓ Stress Test
- ✓ EKG

**Imaging Info**

- ✓ NM/PT
- CT

**Interpretations**

- ✓ Quant Values
- ✓ LV Perfusion
- ✓ RV Perfusion
- ✓ LV Function
- ✓ RV Function
- CT Findings

**Summary**

- ✓ Miscellaneous
- ✓ Overall

**LV Perfusion**

Traditional  Score maps  Dictation

LV Perfusion Summary: Normal  Abnormal  Ischemia  Infarction  Uninterpretable

TID: 1.29

Findings: Abnormal suggestive of multi-vessel ischemia

Stress: 16, Rest: 0, Reversibility: 16

LV Perfusion Impression: (1) A large sized, mild to severe severity, completely reversible defect exists in the mid and distal anterior, lateral, inferior, and septal segments and apex.

Consistent with: 1 vessel disease

**RV Perfusion**

RV Perfusion Summary: Normal

RV Perfusion Impression: Normal

Within 4DM Reporting:

1. Select the **LV Perfusion** ① page to review the perfusion values.
2. Use the toggles to select the **display mode of the LV Perfusion page** ②:
  - **Traditional** - Utilize the defect sentence generator to construct impression sentences.
    - > Traditional mode is only available when the Reporting language setting is set to English.
  - **Score maps** - 4DM generates impressions using the scored maps and defect descriptor table(s).
  - **Dictation** - Use a text box to free text impressions, or the user may enter impressions using a dictation device.
3. Use the toggle to select the **LV Perfusion Summary** ③. If **Abnormal** is selected, use the check box to select suggestive of **Ischemia** or **Infarction**.
4. The **TID Value** ④ is auto-populated from the **Quant Values** page in 4DM Reporting. The value may be edited using the LV Perfusion table on the Quant Values page.
5. Click the **Findings** ⑤ text box to select the status of the TID value. Three selections are available:
  - Normal
  - Borderline abnormal
  - Abnormal suggestive of multi-vessel ischemia
6. Polar map summed scores and maps displayed will vary based on study protocol suggested by the template selected.

**Interpretations**

- ✓ Quant Values
- ✓ LV Perfusion

①

Traditional  Score maps  Dictation

②

LV Perfusion Summary: Normal  Abnormal  Ischemia  Infarction  Uninterpretable

③

TID: 1.08

④

Findings: Normal

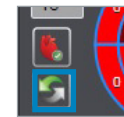
- Normal
- Borderline abnormal
- Abnormal suggestive of multi-vessel ischemia

⑤

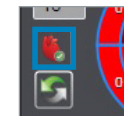
7. The user may increase or decrease a segments score ⑥ by clicking on a segment:
  - Left-click increases a segments score
  - Right-click decreases a segments score
  - > Note: The Reversibility polar map is not editable, the scores are derived from the stress and rest summed scores.
  - > Values adjusted in 4DM Reporting are not bi-directional, and do not feedback to 4DM score maps.
  - > A control is desensitized if the value is derived from the stress and rest summed scores and is note editable.
  - > Ischemia or Infarction is calculated from the stress and rest summed scores.
8. To reset controls to their default 4DM imported values, select the **Reset** ⑦ tool next to the score map.
  - In *standalone* 4DM Reporting, the score maps will reset to a blank, unscored map.
9. To set the score map to normal, select the **Set Normal** ⑧ tool next to the score map.
10. The **LV Perfusion Impression** ⑨ field automatically generates an impression sentence(s) if auto-text is turned on. The user can edit the generated sentence and add any free text in the box.



⑥



⑦



⑧

LV Perfusion Impression  
 (1) A large sized, mild to severe severity, completely reversible, inferior, and septal segments and apex.

⑨

## LV Function

Within **4DM Reporting**:

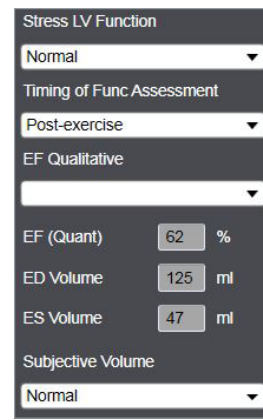
1. Select **LV Function** ① to review the tables populated from 4DM quantification values.
2. Use the dropdown menus to select the LV functional ② parameters:
  - Stress LV Function
  - Timing of Functional Assessment
  - EF Qualitative
  - Subjective Volume

✓ LV Function

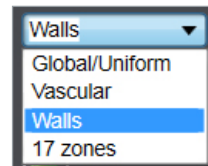
①

3. The Quantified EF%, ED Volume, and ES Volume are auto-populated from the Quant Values page in Reporting. The values may be edited using the LV Perfusion table on the Quant Values page.
4. Click the **Regional Wall Motion** ③ dropdown menu to select the function overlay of the score map.
5. The user may increase or decrease a segments score by clicking on a segment:
  - Left mouse click increases a segments score
  - Right mouse click decreases a segments score

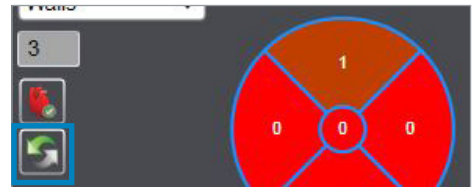
> Note: values adjusted in Reporting are not bi-directional, and do not feedback to 4DM score maps.
6. To reset controls to their default 4DM imported values, select the **Reset** ④ tool next to the score map.
  - In *standalone* 4DM Reporting, the score maps will reset to a blank, unscored map.
7. To set the score map to normal, select the **Set Normal** ⑤ tool next to the score map.
  - A control is desensitized if the value is derived from the Quant Values table and is not editable.
8. The **LV Perfusion Impression** ⑥ field automatically generates an impression sentence(s) if auto-text is turned on. The user can edit the generated sentence and add any free text in the box.
9. Be sure to save patient information when the available fields are completed, select the **Save** ⑦ tool in the top toolbar.



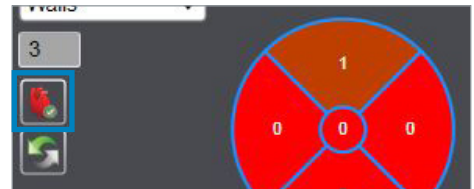
②



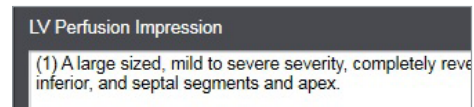
③



④



⑤



⑥



⑦

# Chapter 4: Finalizing a Report

## Overview

4DM Reporting accommodates for exporting reports at each point in the workflow. The Technologist can export preliminary reports for review. When it is time to finalize and export the report only the Interpreting Physician can export final or amended reports.

There are three states of an exported report:

1. **Preliminary**
2. **Final**
3. **Amended**

The report will be saved to the location specified in the Administration Module. To specify save locations refer to [Configuring Save and Export Settings](#).

## Export a Preliminary Report

A preliminary report of the image and patient information can be exported to the location specified by the Fellow/Resident or Technologist. The technologist will use this to provide the physician with a quick reference for review and a rough idea on the status of the patient. This is not a final report.

### Pre-Imaging Report

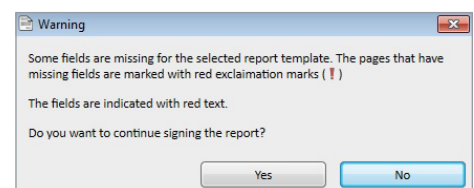
<b>Patient Name:</b> --	<b>Study Date:</b> --
<b>Patient ID:</b> --	<b>Referring Physician:</b> --
<b>Age/Sex:</b> -- yo --	<b>Reporting Physician:</b> --
<b>Height:</b> -- cm	<b>Weight:</b> -- kg
	<b>BSA:</b> -- m <sup>2</sup>

**INDICATIONS:**

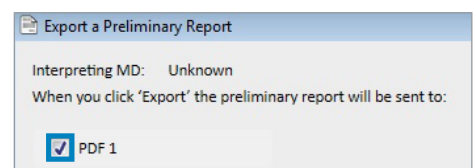
1. Click the **Finalize/Amend/Export** ① tool in the top toolbar to export a report.
2. If required fields are incomplete, a warning window ② will open to notify the user.
  - Select **No** to return to 4DM Reporting and correct the missing field(s).
  - Select **Yes** to ignore missing field(s) and continue exporting a report.
3. Click the check box ③ to select the location(s) for storing the preliminary report. Only valid connection nodes are available to select.
4. Click the **Export** ④ button to send a preliminary report to specified locations.



①



②



③



④

## Export a Final Report

A signed final report of the nuclear findings is the definitive documentation of the study and can be saved to the location specified by the interpreting physician.

<b>Nuclear Medicine Myocardial Perfusion</b>			
<b>Patient Name:</b>	4DM SPECT, 001	<b>Study Date:</b>	03/09/2007
<b>Patient ID:</b>	004-001,1D GS/R (Ischemic2)	<b>Referring Physician:</b>	Doe, John
<b>Age/Sex:</b>	52 yo Male	<b>Reporting Physician:</b>	None
<b>Height:</b>	172.72 cm	<b>Weight:</b>	76.66 kg
		<b>BSA:</b>	1.91 m <sup>2</sup>

**INDICATIONS:** chest pain

1. Select the **Finalize/Amend/Export** 1 tool in the top toolbar to export a report.
2. If required fields are incomplete, a warning window 2 will open to notify the user.
  - Select **No** to return to 4DM Reporting and correct the missing field(s).
  - Select **Yes** to ignore missing field(s) and continue exporting a report.

**Note:** The Interpreting Physician must be assigned to the report on the Demographics pages within 4DM Reporting to export the report.

3. Click the check box 3 to select the location(s) for storing the final report. Only valid connection nodes are available to select.
4. Enter the password. To complete the export, the interpreting physician is required to enter the password created when the interpreting physician was added in 4DM Administration.

**Warning:** The user should ensure all of the data elements included in the report (demographics, qualitative, and quantitative data) are accurate before signing the report.

5. Click the **Export** 4 button.
6. Once the export function has successfully executed, the final report will be stored in the location(s) selected.



1



2



3



4

### Export to ASNC ImageGuide Registry

The ASNC ImageGuide Registry is the nation's first cardiovascular nuclear imaging data registry. Patient information and study quantifications can export to the ImageGuide Registry directly from 4DM. An XML output from 4DM will automatically push and upload into the ASNC Registry once your site is configured. The user will need to distribute the XML reports to ASNC provided destination.

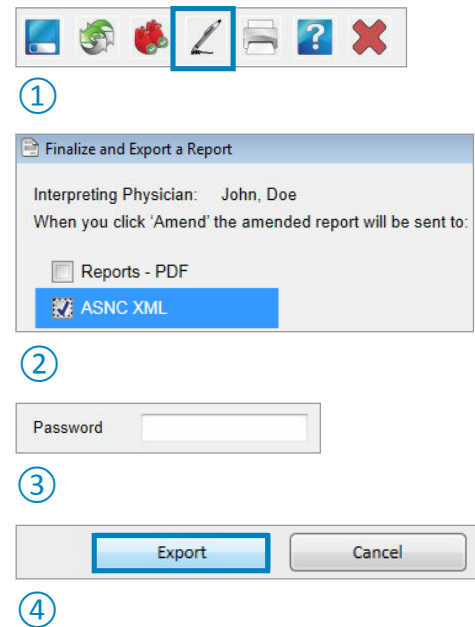
A connection node must be configured in the 4DM Administrator, refer to [Specify Location\(s\) for Sending Reporting Information](#).



1. Click the **Finalize/Amend/Export** ① tool in the top toolbar to export a report to the ASNC ImageGuide Registry.  
**Note:** The Interpreting Physician must be assigned to the report on the Demographics pages within 4DM Reporting to export to the registry.
2. Use the checkbox ② to select the ASNC XML report option. By default the reports will be stored in the directory, C:\Users\Public\Documents\INVIA\4DMReporting\reports\
3. Enter the password ③. To complete the export, the interpreting physician is required to enter the password created when the interpreting physician was added in 4DM Administration.
4. Click the **Export** ④ button.

## Export an Amended Report

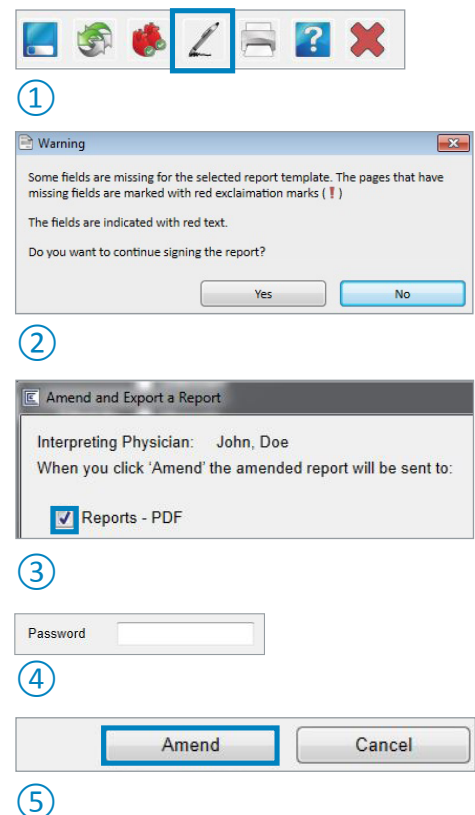
The finalized report can be amended by the interpreting physician and saved to the specified location(s) selected.










## Nuclear Medicine Myocardial Perfusion

<b>Patient Name:</b>	4DMSPECT,001	<b>Study Date:</b>	03/09/2007
<b>Patient ID:</b>	004-001,1D GS/R (Ischemic2)	<b>Referring Physician:</b>	Doe, John
<b>Age/Sex:</b>	52 yo Male	<b>Reporting Physician:</b>	None
<b>Height:</b>	172.72 cm	<b>Weight:</b>	76.66 kg
		<b>BSA:</b>	1.91 m <sup>2</sup>

1. Select the **Finalize/Amend/Export** ① tool in the top toolbar to export an amended report.
2. If required fields are incomplete, a warning window ② will open to notify the user.
  - Select **No** to return to 4DM Reporting and correct the missing field(s).
  - Select **Yes** to ignore missing field(s) and continue exporting a report.**Note:** The Interpreting Physician must be assigned to the report on the Demographics pages within 4DM Reporting to amend the report.
3. Use the check boxes ③ to select where to store the report. Only valid connection nodes are available to select. Multiple may be selected.
4. Enter the password ④. To complete the export, the interpreting physician is required to enter the password created when the interpreting physician was added in 4DM Administration.
5. Click the **Amend** ⑤ button.
6. Once the export function has successfully executed, the amended report will be stored in the location(s) selected.



# Symbols

	<p><b>MANUFACTURER</b></p>
	<p><b>DATE OF MANUFACTURE</b></p>
	<p><b>CATALOGUE NUMBER</b></p>
	<p><b>CONSULT INSTRUCTIONS FOR USE</b></p>
	<p><b>EUROPEAN CONFORMITY: CE MARK</b></p>
	<p><b>AUTHORISED REPRESENTATIVE IN THE EUROPEAN COMMUNITY</b></p>
 <p>(01)00864974000233 (10)2017</p>	<p><b>UNIQUE DEVICE IDENTIFIER (UDI) FOR V2017</b></p>



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