
Cardio Server 6.0 – E3 Desktop

User Manual



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FUJIFILM Australia Pty Ltd is the exclusive dealer for the Epiphany Cardio Server ECG Management System in Australia and New Zealand.

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Intended Use: The Cardio Server ECG Management System software is intended to be marketed to medical professionals and for point-of-care use. The software is designed to work with ECG Management databases located throughout the medical community that commonly store, retrieve, display, edit, and print high-resolution records of ECG data received from devices. The Cardio Server ECG Management System software allows medical professionals responsible for the diagnosis and treatment of patients (adult and pediatric) with heart disease to do the following:

1. Review specific patient ECG data which is available through on-screen display, printer, email, fax, or Hospital Information System (HIS) results which report by interface or other customized databases.
2. Analyze ECG data using calipers for measurement of various intervals. The Cardio Server system does not modify the original ECG waveform information, but it does provide an automated ECG interpretive analysis of the data. The ECG data display can show 1, 3, or 12 leads at once, full disclosure, user-selected strips, interpretations (editable by physician), and lists studies using various filters (study type, patient, etc.). Resulting ECG records are all associated by patient ID and include the physician interpretation.

Cautions



Federal law restricts this device to sale by or on the order of a physician. ECG tracings and serial comparison results must be reviewed by a trained medical professional.



Device software modifications, after standard forms are implemented, may result in incorrect data-mapping. Mapping of fields must be validated by the user after any device software modifications. Failure to do so may result in blank fields or incorrect data-mapping.



Carefully read all instructions prior to use. Observe all warnings and precautions noted in these directions. Failure to do so may result in patient complications.



Cardio Server 6.0 E3 Desktop is validated for use with Microsoft Edge (Chromium) and Google Chrome. If users choose to use a different web browser, please be advised that certain functions of Cardio Server may not work as anticipated.



Screenshots in translated versions of this manual retain English labels.



Minimum Luminance & Contrast requirements: luminance of 35 cd/m² and a contrast not less than 7:1 under normal, ambient lighting conditions. Typical LCD display standards exceed the above requirements.



Screenshots in this manual contain de-identified demographic data. No protected health information (“PHI”) has been used. Epiphany Healthcare is fully compliant with the Health Insurance Portability and Accountability Act (“HIPAA”) Privacy Rule, the Health Information Technology for Economic and Clinical Health Act (“HITECH”), and the Omnibus Rule.

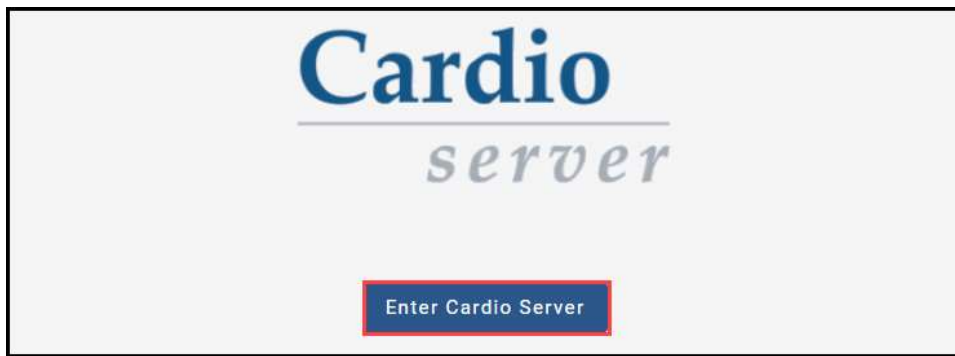
ACCESSING & LOGGING IN

Within facility - From any internet-enabled computer (*Microsoft Edge (Chromium) or Google Chrome*) on the facility’s local area network (*LAN*), type the web address or the name of the Cardio Server server into the web browser’s address bar.

Remotely - From any internet-enabled computer (*Microsoft Edge (Chromium) or Google Chrome*) with sufficient access to the network where Cardio Server resides, type the web address or the name of the Cardio Server server into the web browser’s address bar. Contact local IT for further directions.

Note: This manual applies to Cardio Server 6.0 E3 Desktop.

If pop-ups are enabled, the login screen will appear. If not, select **Enter Cardio Server** to display the login screen.



Type a *Username* and *Password* into the appropriate fields, remembering they are case sensitive. Change the domain if necessary. Select **Enter**.



ACCOUNT LOCKOUT

Multiple failed attempts to log in will result in lockout of the user's account. The account can be unlocked by an Admin user. Contact your local system administrator for Cardio Server.



INBOX

The *Inbox Settings* and list of studies will be displayed upon login. Site access and default settings for the initial login are based on the user's primary account in Cardio Server Classic. The *Inbox Settings* may be modified and saved by the user as the new default settings in Cardio Server E3 desktop. Changes made to the E3 desktop Inbox Settings will not be reflected in Cardio Server Classic.

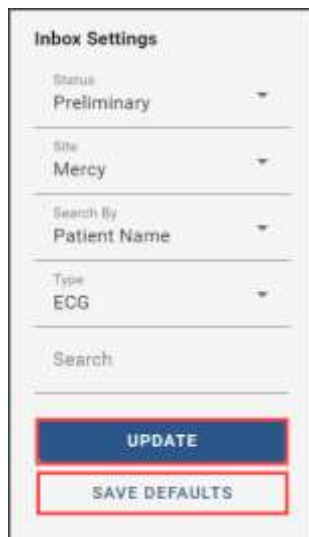
Status	Date Performed	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Type	Location
P	12/14/2006 07:34:00	KOLLAR, MILLARD	0100530892	11/6/1956	Ace-11	CAROLYN MOSBY	JACQUE HEDEL	ECG	CDU-ED
P	12/14/2006 09:14:00	ALLEN, ROSE E.	0100070298	1/18/1936	Mercy-6	SUZANNE A NANISTA	MCCALLUM	ECG	SPE-ED
P	12/14/2006 09:15:34	AHMED, SHERYL	0100105019	6/29/1942	Mercy	JOYCE B FRAZIER	MCELDERRY TOCE/VERGER	ECG	SQU
P	12/14/2006 09:27:57	HUBBARD, BARRY L.	0100771642	10/8/1928	Grace-2	KATHERINE A FEVELLA	MIKEY ZEK	ECG	SDB
P	12/14/2006 10:02:35	CARROLL, BERNARD	0100498125	3/25/1947	Ace-6	LASHEA RUFFELT	VALENTINO	ECG	EE
P	12/14/2006 11:03:17	STEWART, EDWARD T.	0100613491	5/17/1983	Peace-4	KAREN M TEACHOUT	FONTENOT	ECG	ETLOP
P	12/14/2006 11:10:43	RUSHING, WALLA	0100837324	4/6/1954	Grace-2	CYRELA S CLARK		ECG	ETLOP
P	12/14/2006 11:55:46	SODTE, JERRICA	0100154299	4/12/1962	Hope-2	ALMA C WEISER	BURNELL	ECG	SCU-SDB

Inbox Settings

Status: Select the drop-down arrow to display the list of *Status* options. The options will vary based on user-role. Select one or more status options by selecting the box associated with the setting. Close the list by selecting **ACCEPT**.



Once the Status list is closed, select **UPDATE** to update the study list in the *Inbox*. If desired, select **SAVE DEFAULTS** to maintain the setting as the new default.

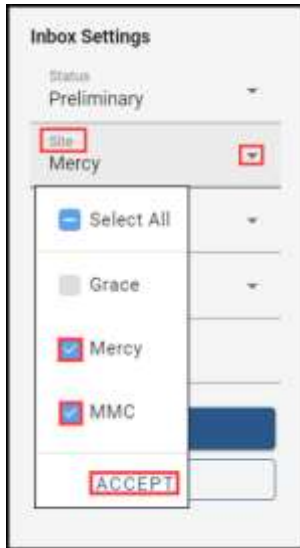


Note: When searching *Confirmed* or *Stored* studies, a search criteria of one or more characters is required in the *Search By* field. (See *Search* field below.) Other status levels (*Preliminary*, *Unconfirmed*, and *Read*) may be searched with a blank *Search By* field.

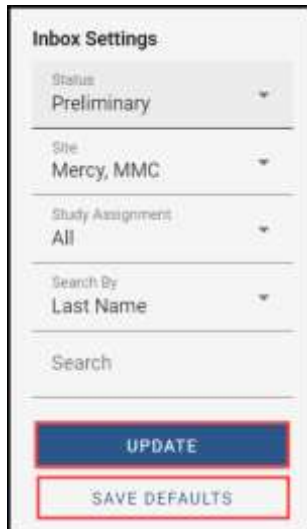
Site: Select the drop-down arrow to display the list of *Site* options. Choose one or more sites by selecting the box associated with the *Site* name. The “*Select All*” and “*Deselect*”

All” options toggle to allow ease of selection. When *Site* selection is complete, select **ACCEPT**.

Note: *Site* access is user-specific and determined by the local system administrator.



Once the drop-down list is closed, select **UPDATE** to update the study list in the Inbox. If desired, select **SAVE DEFAULTS** to maintain the setting as the new default.

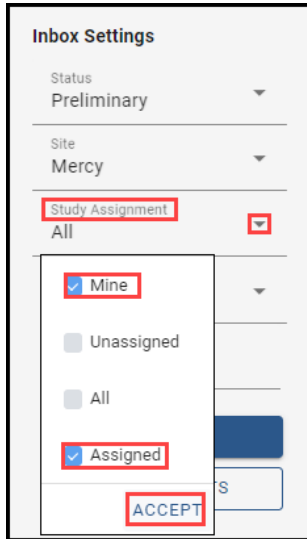


Study Assignment (Workflow Option): This filter is enabled based on workflow requirements and is most often used by Sign Users. When enabled, the list may not contain all the options described below. Only options that apply to your specific workflow will be available.

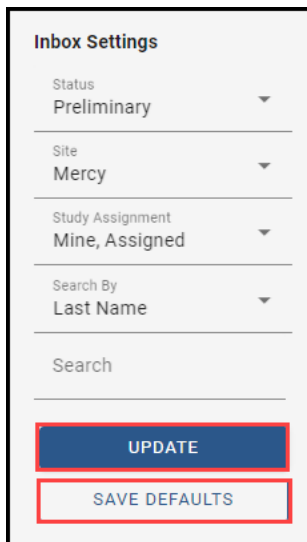
- a. *All*: User’s Inbox defaults to all studies and user has access to all studies.
- b. *Mine*: User’s Inbox defaults to user’s assigned studies. User may also have access to studies not assigned to him/her if additional options are selected.

- c. *Unassigned*: User has access to studies that have not been assigned to a specific reader.
- d. *Assigned*: User has access to studies that have been assigned to a reader.

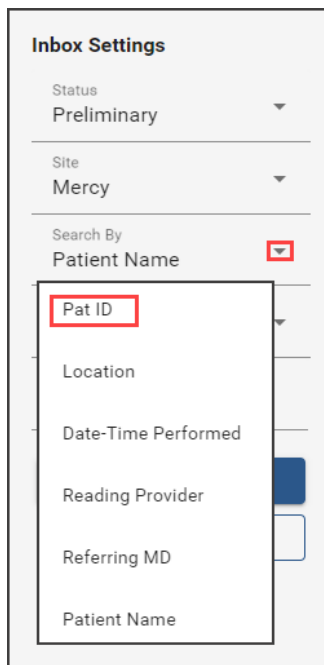
Choose the drop-down arrow to display the list of *Study Assignment* options. Choose one or more options by selecting the box associated with the filter. Select **ACCEPT**.



Once the drop-down list is closed, select **UPDATE** to update the study list in the Inbox. If desired, select **SAVE DEFAULTS** to maintain the setting as the new default.



Search By: Select the drop-down arrow to view the Inbox *Search By* options. This selection will determine the search value used in the *Search* field. One option may be selected to determine the criterion for Inbox search. Once the option is selected the list will close.



Search: Enter the desired *Search* value and select **Update** to filter the Inbox. When searching *Patient Name*, the following format options are available: Example patient – *Doe, John*

- Search last name – *Doe*
- Search last name, first name – *Doe, John*
- Search last name, first initial or first few letters of first name – *Doe, J* or *Doe, Jo*
- Search beginning letters of last name, beginning letters of first name – *D, Jo*

Note: The *Search* value options are determined by one of the *Search By* settings (*Patient ID, Location, Date-Time Performed, Reading Provider, Referring MD, Patient Name*). When searching *Date-Time Performed*, a calendar will be presented for date selection.



Select the “X” in the *Search* field to clear the search value.

Inbox Settings

Status
Preliminary

Site
Mercy

Study Assignment
All

Search By
Last Name

Search
adams X

UPDATE

SAVE DEFAULTS

Type: Select the drop-down arrow to view the available report *Type* (modality) options. Choose one or more types of reports by selecting the box associated with the *Type* name. The “*Select All*” and “*Deselect All*” options toggle to allow ease of selection. When *Type* selection is complete, select **ACCEPT**.

Inbox Settings

Status
Preliminary

Site
Ace, Ace-2, Ace-3, Ac...

Search By
Patient Name

Type
ECG v

- Select All
- STRESS
- ECG
- PFT
- HOLTER
- EVENTS
- ICD
- PACER

ACCEPT

Note: Multiple *Type* selections will result in the addition of an Inbox column header to identify the report type. The *Type* column will not be displayed if only one report *Type* is selected.

Status	Date Performed	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Type	Location
U	1/15/2007 12:17:00	WINTER, KEITH	D00505831	8/27/1950	Peace-2	MARY HEMMICK	MCELDERRY	ECG	PACU
U	1/28/2013 19:00:00	McCarthy, Ari	D0027301	6/17/1980	Peace-2	Jonathan Silver	JANIE M CLARK	PFT	SOS
U	6/17/2013 12:00:00	JIMNEZ, JAVIER	J7634E	9/4/2013	Peace-2	Jonathan Silver	JANIE M CLARK	HOLTER	SICU
U	8/20/2013 19:00:00	McCarthy, Ari	D0027301	2/17/1979	Peace-2	Jonathan Silver	John Silver	PFT	4W

Inbox Background Colors

A study’s background color in the Inbox denotes a specific meaning. Standard workflow studies are displayed with a white or gray background. A red or pink background indicates other study designations. This is an optional workflow and its use will be determined by the local system administrator.

Critical Statement Notification (“CSN”) ECG studies are displayed in the Inbox with a red background and a caution symbol located to the right of the study information. When this optional workflow is used, CSN studies will be displayed at the top of the Inbox above all other designations.

Status	Date Performed	Patient Name	Patient ID	Site	Reading Provider	Location
P	3/5/1992 18:12	FRANKLIN, RIC...	D00000047	Mercy	Holly Allen	
U	3/12/2014 12:08	CASTERLINE, G...	D00000076	MMC		
U	3/20/2014 06:30	FRANKLIN, RIC...	D00000047	MMC	sign user	CDU
U	10/30/2014 06:27	JOHNS, COLBY	D001515	MMC		Cardiology

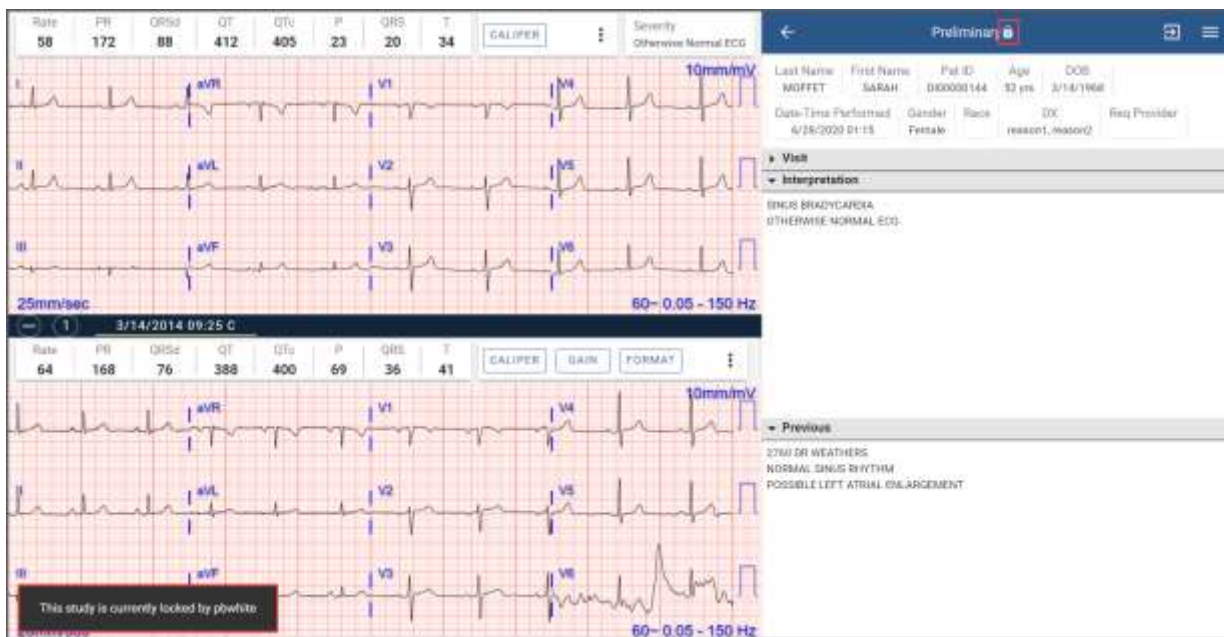
STAT studies have a pink background in the Inbox. When this workflow is used, a STAT ECG will be displayed above all standard ECGs in the list and below any Critical Statement Notification ECGs.

Status	Date Performed	Patient Name	Patient ID	Site	Reading Provider	Location
L	3/23/2020 06:34	COX, KATHERINE	D00000011	Mercy	B Smith	
U	3/12/2014 12:08	CASTERLINE, G...	D00000076	MMC		
U	3/20/2014 06:30	FRANKLIN, RIC...	D00000047	MMC	sign user	CDU
U	10/30/2014 06:27	JOHNS, COLBY	D001515	MMC		Cardiology

Locked studies have a yellow background and lock icon to indicate that the study is open for editing by another user. Only one user at a time may perform edits. Other users may select and view the study while it is being edited.



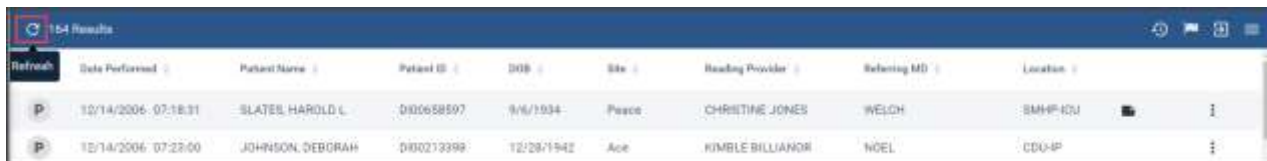
When a locked study is opened a message containing the name of the user who is editing the study will be displayed at the bottom, left of the screen. See examples below: *“This study is currently locked by pbwhite.”* There will also be a lock icon beside the study status.



Inbox Header Icons and Functionality

Tooltips are provided for each icon in the application. A text label will appear when the user hovers over each icon.

Refresh icon updates the Inbox list.



Results displays the total number of studies in the Inbox based on the *Inbox Settings* filters.

Status	Date Performed *	Patient Name	Patient ID	Site	Reading Provider	Location
U	12/17/2006 05:44:16	AHMED, SHERYL	DI00105019	Peace-ED	MARY A LAVENDER	PICU
U	12/17/2006 06:37:58	ELLIS, KAREN	DI00051816	Peace-7	MELANIE L ELLIS	CDU-ER
U	12/17/2006 12:00:31	EDWARDS, JOESEPH	DI00636235	Peace-9	GAYLE WILLIAMS	PACU

Restore Skipped returns skipped studies to the Inbox.

Status	Date Performed *	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
U	12/17/2006 15:01:02	BRADFORD, PAUL	DI00766713	3/3/1965	Grace-2	CHRISTINE JONES	YOUNG PERRON	SCU-ICU
U	12/17/2006 16:12:44	ENDO, MEMEOND	DI00708829	2/14/1927	Ace-3	FRANCES WILKINSON	PERRON	SP-ICU
U	12/17/2006 18:10:41	BEATTY, CARLA	DI00049904	10/2/1903	Central-9	BETTY CRAIN	STUEBEN BAKER / PERRON	ICU

Skipped displays the number of studies skipped and not displayed in the Inbox.

Status	Date Performed *	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
U	12/17/2006 16:12:44	ENDO, MEMEOND	DI00708829	2/14/1927	Ace-3	FRANCES WILKINSON	PERRON	SP-ICU
U	12/17/2006 18:10:41	BEATTY, CARLA	DI00049904	10/2/1903	Central-9	BETTY CRAIN	STUEBEN BAKER / PERRON	ICU

History allows the user to view all reports accessed within the 24-hour calendar day.

Status	Date Performed *	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
P	12/15/2006 15:54:02	TODD, MICHAEL	DI00482112	9/20/1940	Grace-6	KAREN L MCDOWELL	ODNET	ETL-OP
P	12/15/2006 16:37:10	DUSAN, SHIRLEY D	DI00178182	8/30/1930	Central-2	WILLIE CRANMER	TEDESCO	ICU

Flag icon allows the user to filter the list results to only those studies with the **Flag** designation. The **Flag** color toggles between yellow and white to indicate the status of the filter. A yellow **Flag** indicates the filter is on and only flagged studies will be displayed in the list. A white **Flag** indicates the filter is off and both flagged and unflagged studies will be displayed in the list. In the screenshot below, the **Flag** filter has been selected and only flagged studies are displayed in the list. Select the yellow **Flag** in the header to remove the filter from the search criteria.

Status	Date Performed	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location	Flagged Studies
P	12/14/2006 09:15:54	AHMED, SHERYL	DI00109019	6/29/1942	Mercy	JOYCE A FRAZER	MCELDERRY TOCE/VERGER	SIJU	Flagged
P	12/14/2006 11:10:43	RUSHING, WALLA	DI00837324	4/6/1954	Grace-2	CYRELLA S CLARK		ETL-OP	Flagged

Log out icon logs the user out of the application.

Status	Date Performed	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
P	12/14/2006 07:18:31	SLATES, HAROLD L	DI00668937	9/9/1934	Peace	CHRISTINE JONES	WELCH	SMHP ICU
P	12/14/2006 07:23:00	JOHNSON, DEBORAH	DI00213998	12/28/1942	Ace	KIMBLE BELLIANOR	NOEL	CDU-IP

Menu icon opens a panel containing additional information and actions.

Status	Date Performed	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
P	12/14/2006 07:18:31	SLATES, HAROLD L	DI00668937	9/9/1934	Peace	CHRISTINE JONES	WELCH	SMHP ICU
P	12/14/2006 07:23:00	JOHNSON, DEBORAH	DI00213998	12/28/1942	Ace	KIMBLE BELLIANOR	NOEL	CDU-IP
P	12/14/2006 07:54:00	KOLLAR, MILLARD	DI00850892	11/8/1956	Ace-S	CAROLYN MOSBY	JACQUE NOEL	CDU-ED
P	12/14/2006 08:42:56	EDWARDS, BELINDA	DI00112194	1/8/1921	Central-E	NAN J MCCAMLESS	MCCARRON	ETL-IP
P	12/14/2006 09:14:00	ALLEN, ROSE E	DI00370298	1/18/1996	Mercy-6	SUZANNE A NANISTA	MCCALLUM	SP-ED
P	12/14/2006 09:15:54	AHMED, SHERYL	DI00109019	6/29/1942	Mercy	JOYCE A FRAZER	MCELDERRY TOCE/VERGER	SIJU
P	12/14/2006 10:03:35	CARROLL, BERNARD	DI00498136	3/25/1947	Ace-6	LASHEA RUPPELT	VALENTINO	ED
P	12/14/2006 11:09:29	HILLER, ARMINDA C	DI00544431	7/21/1950	Hipe-8	EDNA H HALLETT	WELCH	4W
P	12/14/2006 11:10:43	RUSHING, WALLA	DI00837324	4/6/1954	Grace-E	CYRILLA S CLARK		ETL-OP
P	12/14/2006 11:55:46	BODTT, JERRICA	DI00154299	4/12/1962	Hipe-2	ALMA C WEISER	BURNELL	SDNJ-SDS

- **User Manual:** Loads the E3 Desktop User Manual with options to view, print, and download.
- **About Cardio Server:** Contains the CE mark and UDI barcode information.
- **Classic UI:** Allows a user to switch to the Cardio Server Classic mode. Cardio Server Classic has an **E3 UI** option that allows the user to return to the E3 Desktop mode.
- **Logout:** Logs the user out of the E3 desktop application.
- **CS version:** Cardio Server software version number.
- **Server:** The server name.
- **Browser:** The current browser in use.
- **Platform:** The current platform in use.

Inbox Columns

Status	Date Performed	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
U	1/11/2007 10:04:01	HILLENBRED EDITH	000270200	5/3/1952	Graca-4	MARTHA GUY	BARNER	ESLON
T	9/15/1994 10:22:22	HILLISMAN WILLIAM	000290445	1/19/1934	General-ED	COROTHY MILLER	JACQUI RIBBINTER	WCU
U	1/8/2007 15:17:00	HENOKAPU SITO, PATRICKA	000140954	2/28/1982	General-S	SHARON M FOUNS	ABMARE	SSHP-WV
P	12/14/2006 12:53:46	HOFKINS JOHN, DOUGLAS B	000099807	1/30/1970	General-E	ALICE M HEINE	INDIGORE TENGICO	CEHIP

Status: Denotes the status of a study

- P = Preliminary
- U = Unconfirmed
- C = Confirmed
- R = Read
- S = Stored
- T = Trash

Date Performed: Date and time the study was performed

Patient Name: Last Name, First Name

Patient ID: Patient ID number, typically a medical record number

DOB: Patient Date of Birth

Site: The *Site* to which a study is assigned

Reading Provider: Assigned Reader

Referring MD: Typically the ordering provider

Type: This column is only present when filtering on multiple report types (modalities); if searching one modality, the *Type* column is not displayed

Location: Location in which the study was performed

Note: Column headers that contain an arrow allow the user to select the arrow and sort the list in ascending or descending order

Study Actions from Inbox Action Panel

Study management may be performed directly from the Inbox. Access a list of frequently used actions by selecting the ellipsis (3 vertical dots) associated with the study. The blue background of the study indicates it has been selected. Options are available based on the user's role and the state of the study.

The screenshot shows a table with 10 columns: Status, Date Performed, Patient Name, Patient ID, DOB, Site, Reading Provider, Referring MD, and Location. The third row is highlighted in red, and a context menu is open over it, listing options: Flag, Print, Trash, Delete, Assign to Site, Assign to Reading MD, Reconcile by ID, Reconcile by Name, and Edit Note.

Status	Date Performed	Patient Name *	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
P	12/24/2006 23:06:19	AFEMIJI, DOROTHY	D00146179	8/16/1979	Grace-8	BARBARA OLIVER	JUNEAU III	SMHP-ED
P	12/14/2006 09:15:54	AHMED, SHERYL	D00105019	6/29/1942	Mercy	JOYCE A PRAZIER	MCLEDDERY TOCE/VERGER	SCU
P	12/16/2006 06:44:15	AHMED, SHERYL	D00105019	6/29/1942	Hope-9	DORIS J DABBS	MCLEDDERY VERGER	SMHP-ED
P	12/16/2006 12:56:43	AHMED, SHERYL	D00105019	6/29/1942	Acc-ED	DIANNE DAVIS	ANSEMAN TOCE	SP-ED
P	12/14/2006 09:14:00	ALLEN, ROSE E	D00070298	1/18/1996	Mercy-6	SUZANNE A NANISTA	MCCALLUM	SCU
P	1/11/2007 23:40:13	APPLING, EVANGELINE	D00292329	1/1/1925	Acc-7	MICHELLE HAYES	THOMPSON	CDU-SP
P	12/16/2006 13:10:32	AVERY, WILLIAM JO	D00579129	12/19/1919	Acc-ED	TRISHA D KLUICK	SABATIER	PCU
P	12/15/2006 03:52:27	BAKER, THOMAS	D00209179	1/4/1933	Mercy-7	EBONY LOWRY	THOMPSON	PCU
P	12/15/2006 08:49:02	BEEBE, LINDA	D00364666	1/10/1958	Grace-9	CAROL A REGEL	ODNET	SCU
P	1/9/2007 22:22:43	BOOTH, DORIS	D00041426	7/7/1982	Peace-3	THERESA J HORNE	PEARSON	ETL-OP
P	12/17/2006 21:11:38	BUFKIN, CHARLES K	D00542781	4/19/1927	Acc-4	DOROTHY C TOMAS YARBROUGH	JENKINS THOMPSON	SMHP-4W
P	12/15/2006 09:39:21	BUKLER, KAYD	D00064381	8/9/1927	Hope-3	FREDA H BECKWORTH	MDUNH	ETL-OP
P	12/16/2006 05:55:16	BUKLER, KAYD	D00064391	8/9/1927	Siaca-2	HELEN A MCCUIRE	MDUNH	ETL-OP

Flag: Select *Flag* to add the flag icon to the study in the Inbox and on the study detail page.

The screenshot shows the same table as above. The third row now has a flag icon in the Location column. A context menu is open over the flag icon, listing options: Flag, Print, and Trash.

UnFlag: Select the *UnFlag* option to remove the flag icon.

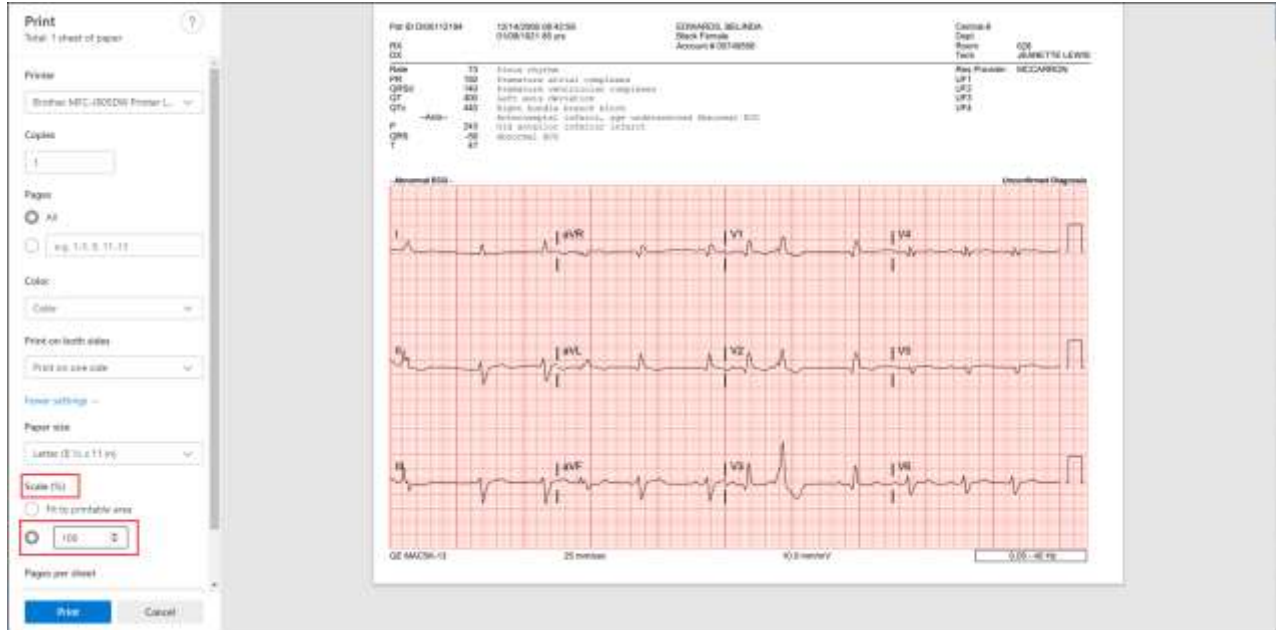
The screenshot shows the same table as above. A context menu is open over the flag icon on the third row, listing options: UnFlag, Print, and Trash.

Print: Select *Print* to open a dialog box to print the study PDF.

The screenshot shows the same table as above. A context menu is open over the flag icon on the third row, listing options: Flag, Print, and Trash.

The print dialog will vary based on the printer settings and the browser used at login.

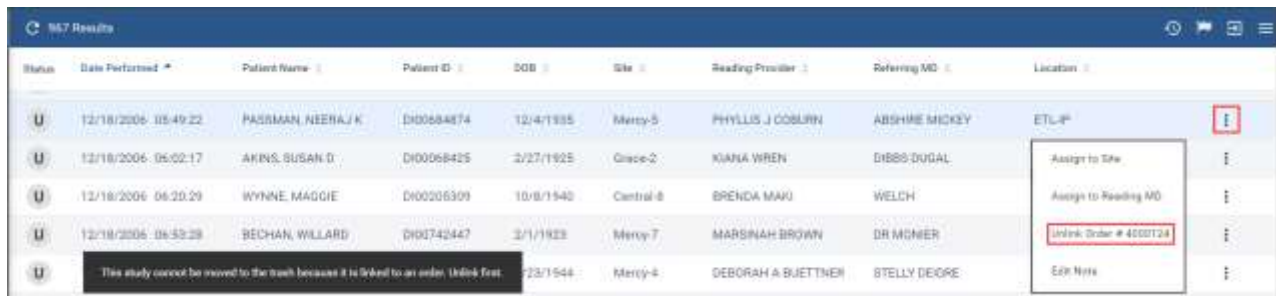
Note: Set printer Scale to 100% to maintain standard 25mm/second, ECG paper speed.



Trash: Select *Trash* to move the study from the clinical workflow to the *Trash* status. If the study is linked to an order, it must be unlinked prior to moving to *Trash* status.

UnTrash: Select *UnTrash* to move the study from *Trash* status to Preliminary status.

Delete: Select *Delete* to permanently delete the study. **Note:** If a study is linked to an order, you will be instructed to unlink the order prior to deletion.



Assign to Site: Select *Assign to Site* to display a list of available sites.

Status	Date Performed *	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
U	12/18/2006 05:49:22	PAISSMAN, NEERAJ K	D00684874	12/4/1985	Mercy-5	PHYLLIS J COBURN	ABSHIRE MCKEY	ETL-IP
U	12/18/2006 05:02:17	AKINS, SUSAN D	D00068425	2/27/1925	Grace-2	KIANA WREN	DBBS DUGAL	
U	12/18/2006 06:20:29	WYNNE, MAGGIE	D00006309	10/9/1940	Central-8	BRENDA MAU	WELCH	
U	12/18/2006 06:53:28	BECHAN, WILLARD	D00742447	3/1/1923	Mercy-7	MARSHAH BROWN	DR MONER	
U	12/18/2006 08:12:00	VALDEZ, MARGAN	D00041304	5/25/1944	Mercy-4	DEBORAH A BUETTNER	STELLY DEGRE	

Select the desired *Site* or begin typing the *Site* name to narrow the list of options. Select **Assign**. The Inbox will be updated with the new *Site* assignment.

Status	Date Performed	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
P	12/14/2006 07:18:31	SLATES, HAROLD L	D00668997	9/6/1934	Peace	CHRISTINE JONES	WELCH	BMHF-ICU
P	12/14/2006 07:23:00	JOHNSON, DEBORAH	D00213298	12/28/1942		LIANOR	NOEL	ODU-IP
P	12/14/2006 07:54:00	KOLLAR, MILLARD	D00550892	11/6/1996		ROSBY	JACQUE NOEL	ODU-ED
P	12/14/2006 08:42:56	EDWARDS, BELINDA	D00112194	1/8/1921		CANLESS	MCCARRON	ETL-IP
P	12/14/2006 09:14:00	ALLEN, ROSE E	D00070298	1/18/1996		ANANISTA		IP-ED
P	12/14/2006 09:15:54	AHMED, SHERYL	D00180019	6/29/1942		HAZIER		ICU
P	12/14/2006 10:03:35	CARROLL, BERNARD	D00498135	3/25/1947		IPPELT		ED

Assign to Reading MD: Select *Assign to Reading MD* to display a list of options. **Note:** The list is restricted to only those users having access to the study’s site.

Status	Date Performed *	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
U	12/18/2006 05:49:22	PAISSMAN, NEERAJ K	D00684874	12/4/1985	Mercy-5	PHYLLIS J COBURN	ABSHIRE MCKEY	
U	12/18/2006 05:02:17	AKINS, SUSAN D	D00068425	2/27/1925	Grace-2	KIANA WREN	DBBS DUGAL	
U	12/18/2006 06:20:29	WYNNE, MAGGIE	D00006309	10/9/1940	Central-8	BRENDA MAU	WELCH	
U	12/18/2006 06:53:28	BECHAN, WILLARD	D00742447	3/1/1923	Mercy-7	MARSHAH BROWN	DR MONER	

The *Reading MD* dialog box will display with a list of site-specific names. Select the desired name or begin typing the name to narrow the list of options. Select **Assign**. The Inbox will be updated with the new *Reading MD* assignment.

Status	Date Performed	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
P	12/14/2006 07:18:31	SLATES, HAROLD L	D00668997	9/6/1934	Peace	CHRISTINE JONES	WELCH	BMHF-ICU
P	12/14/2006 07:23:00	JOHNSON, DEBORAH	D00213298	12/28/1942			NOEL	ODU-IP
P	12/14/2006 07:54:00	KOLLAR, MILLARD	D00550892	11/6/1996			JACQUE NOEL	ODU-ED
P	12/14/2006 08:42:56	EDWARDS, BELINDA	D00112194	1/8/1921				ETL-IP
P	12/14/2006 09:14:00	ALLEN, ROSE E	D00070298	1/18/1996				
P	12/14/2006 09:15:54	AHMED, SHERYL	D00180019	6/29/1942				
P	12/14/2006 10:03:35	CARROLL, BERNARD	D00498135	3/25/1947				

Reconcile by ID: Select *Reconcile by ID* to search Cardio Server for an open order containing the same Patient ID as the study's Patient ID.

Reconcile by Name: Select *Reconcile by Name* to search Cardio Server for an open order with the same last name as the study.

Status	Date Performed	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
P	12/24/2006 23:06:19	AFEMU, DOT	D00146179	6/14/1978	Grace-B	BARBARA CLYBES	JANEAU, J	STPH-ED
P	12/14/2006 09:15:54	AHMED, SHERYL	D00105019	6/25/1942	Mercy	JOYCE A FRAZIER	MCELDERRY TOOE/YERGER	
P	12/15/2006 06:44:15	AHMED, SHERYL	D00105019	6/25/1942	Hope-B	DORE J DABBS	MCELDERRY YERGER	
P	12/16/2006 12:56:43	AHMED, SHERYL	D00105019	6/25/1942	Acc-ED	DIANNE DAVIS	ANSEMAN TOOE	
P	12/14/2006 08:14:00	ALLEN, ROBE E	D00070298	1/18/1998	Mercy-B	SUZANNE A NANISTA	WOCALLUM	

Select one of the reconcile options to open the *Order Search* dialog box containing a list of available orders that matches the search criteria. The selected study information has a dark, blue background and is located above the *Order Search* box. The list of available orders is displayed below the column headers.

After verifying the correct order information, **Select** the desired order.

Patient Name	Patient ID	DOB	Date	Status	Order #	Modality	Site
Ahmed, Dorothy	D00146179	6/14/1978	12/25/2006 00:00:00	Open	4000990	EDG	Peace-B

Note: If no orders appear, you may remove the search criteria to perform an open search or manually enter a *Name* or *Patient ID* or modify the filter settings for *Order Date*, *Order Number*, and *Site* to display a list of open orders based on your selection(s).

Reconciliation of an order to a study is based on the following fields:

- Patient Last Name
- Patient First Name
- Patient ID
- Date of service

If there is a mismatch of any of the *Study* information, the background color of the mismatched field will be highlighted. The left *Study* column represents patient information received from the device. The right *Order* column represents the order information. If one

or two fields do not match the order, those fields will display with a yellow background. In the below example, the *First Name* of the study does not match the *First Name* of the order. A mismatch between the values will prompt a left-facing arrow to appear in the center column. Select the arrow to update the incorrect *Study* information with the *Order* information. Each arrow must be selected to update the associated value. Once selected, the arrow will no longer be visible.

	Study		Order #4000390
Last Name	Afemul		Afemul
First Name	Dot	←	Dorothy
Patient ID	DI00146179		DI00146179
Date	12/24/2006		12/25/2006
		CANCEL	SAVE & PROMOTE

If the first three fields do not match the order, the background will be red alerting the user to multiple discrepancies. The below example has incorrect information in the *Last Name*, *First Name*, and *Patient ID* fields of the Study column. Each of the three fields has a red background.

	Study		Order #74
Last Name	Ramoz	←	Ramos
First Name	Sue	←	Susan
Patient ID	DI00000145	←	DI00000146
Date	6/29/2020		6/29/2020
		CANCEL	SAVE & PROMOTE

The left-facing arrow for each field must be selected to update the *Study* information. After each arrow has been selected, the *Study* values will update, the arrows will no longer be visible, and **Save & Promote** will be an active, selectable button as seen below.

	Study	Order #74
Last Name	Ramos	Ramos
First Name	Susan	Susan
Patient ID	DI00000146	DI00000146
Date	6/29/2020	6/29/2020
CANCEL		SAVE & PROMOTE

Unlink Order: Select *Unlink Order* to unlink the order from a study. A brief message will appear in the lower, left corner of the screen stating, “*This Order Has Been Unlinked.*” The study will be moved to the Preliminary status. The unlinked order may be reconciled to another study provided it has not been canceled or closed by the HIS/EMR system.

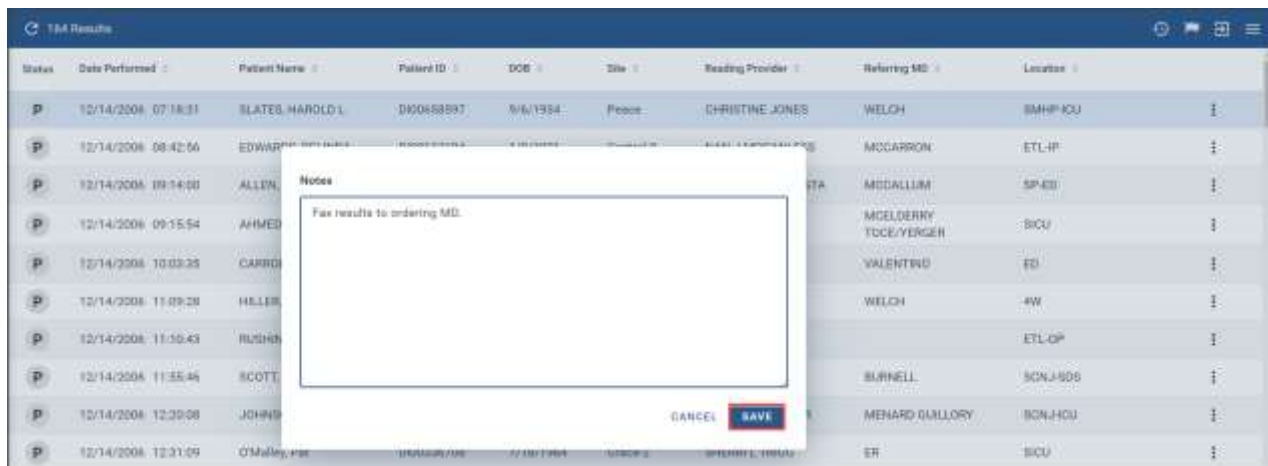
Status	Date Performed *	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
U	12/18/2006 05:49:22	PASSMAN, NEERAJ K	DI00584874	12/4/1985	Mercy-5	PHYLLIS J COBURN	ABSHIRE MCKEY	<ul style="list-style-type: none"> Assign to Site Assign to Reading MD Unlink Order # 4200124 Edit Note
U	12/18/2006 05:02:17	AKINS, SUSAN D	DI00068425	3/27/1925	Grace-2	WANA WREN	DIBBS DUGAL	<ul style="list-style-type: none"> Assign to Site Assign to Reading MD Unlink Order # 4200124 Edit Note
U	12/18/2006 08:20:29	WYNNE, MAGGIE	DI00206309	10/8/1940	Central-8	BRENDA MAH	WELCH	<ul style="list-style-type: none"> Assign to Site Assign to Reading MD Unlink Order # 4200124 Edit Note
U	12/18/2006 06:52:29	BECHAN, WILLARD	DI00742447	3/1/1923	Mercy-7	MARSHAH BROWN	DR MGNER	<ul style="list-style-type: none"> Assign to Site Assign to Reading MD Unlink Order # 4200124 Edit Note

Note: Demographic data **will not** revert to the original data contained in the study prior to reconciling the order. For example, if the original patient name, John Doe, was updated to John Smith by the reconciled order, once unlinked, the name will remain John Smith until the study is linked to another order.

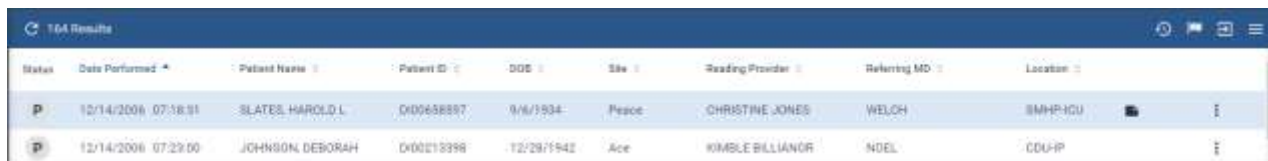
Edit Note: Select *Edit Note* to add a note to the study. The *Note* is associated with the study in Cardio Server and may be viewed by users with *Note* permission. It is not included in the final, confirmed result posted in the patient’s chart in the EMR.

Status	Date Performed *	Patient Name	Patient ID	DOB	Site	Reading Provider	Referring MD	Location
P	12/14/2006 07:18:31	SLATES, HAROLD L	DI00558597	9/8/1934	Peace	CHRISTINE JONES	WELCH	SMHP-100
P	12/14/2006 07:23:00	JOHNSON, DEBORAH	DI00218998	12/28/1942	Ace	KIMBLE BILLIAHOR	NGEL	<ul style="list-style-type: none"> Assign to Site Assign to Reading MD Unlink Order # 4200124 Edit Note
P	12/14/2006 07:34:00	HOLLAR, MILLARD	DI00508992	11/6/1906	Ace-5	CARDYN MOSEY	JACQUE NOEL	<ul style="list-style-type: none"> Assign to Site Assign to Reading MD Unlink Order # 4200124 Edit Note
P	12/14/2006 08:42:56	EDWARDS, BELINDA	DI00112194	1/8/1921	Central-8	NAN J MCCANLESS	MCCARRON	<ul style="list-style-type: none"> Assign to Site Assign to Reading MD Unlink Order # 4200124 Edit Note
P	12/14/2006 08:14:00	ALLER, ROSE E	DI00070298	1/18/1996	Mercy-6	SUZANNE A NANISTA	MCCALLUM	<ul style="list-style-type: none"> Assign to Site Assign to Reading MD Unlink Order # 4200124 Edit Note
P	12/14/2006 09:15:54	AHMED, SHERYL	DI00108019	6/29/1942	Mercy	JOYCE A FRAZER	MCDERRERY TOOEY-VERGER	SIU

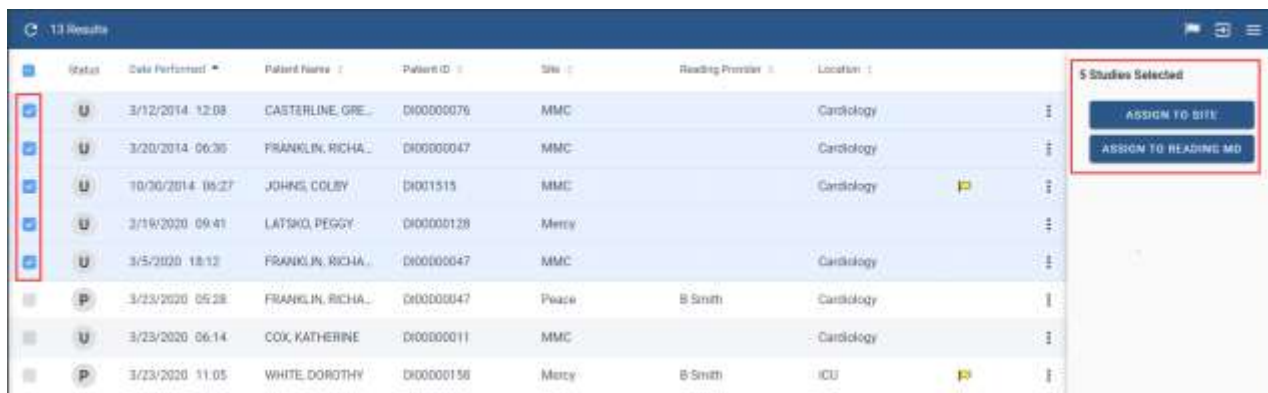
Free-text in the *Notes* field. Select **Save**.



The **Notes** icon will be displayed with the study information indicating a note has been added. Select the **Notes** icon to view or edit the message.



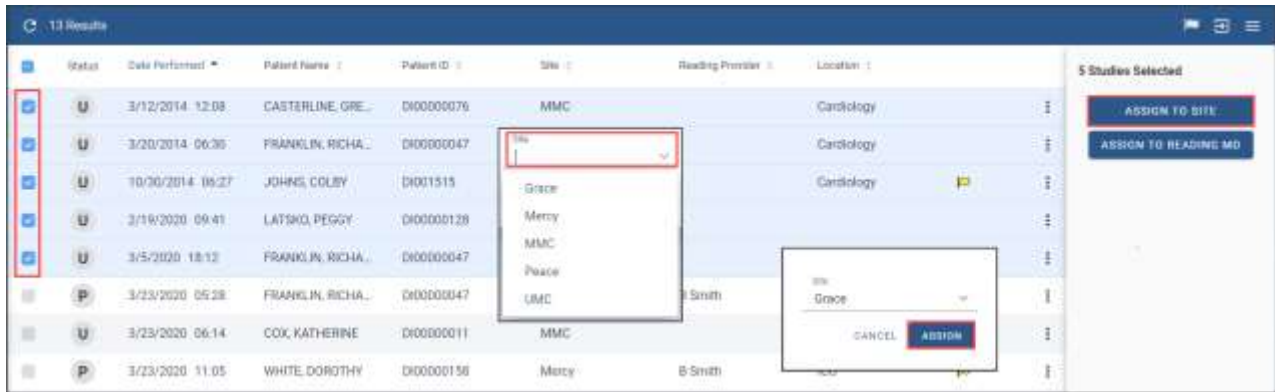
Batch Assignment (Option): Batch assignment is an optional workflow that allows a group of studies to be assigned to a *Site* or a *Reading MD*. Enabling this option is determined by the local system administrator. When enabled, a checkbox will be available for each study in the first column. Select the checkbox associated with the study to include that study in the batch assignment. Each study may be selected individually or the entire list may be selected using the box in the top header. The top-header box toggles between selecting and deselecting all studies in the list. Once a box is selected, the right panel will open to display the number of studies selected and the options of **Assign to Site** or **Assign to Reading MD**.



Note: A maximum of 100 studies may be assigned. Selecting over 100 studies will result in an error message in the lower, left corner of the screen stating, “Too many studies

were selected for assignment. The maximum number of studies that can be assigned is 100.”

Assign to Site (Batch): The *Site* dialog box will display with a list of *Sites* available to the user. Select the desired *Site* or begin typing the *Site* name to narrow the list of options. Select **Assign**. The batch of selected studies will be updated with the new *Site* assignment.



Assign to Reading MD (Batch): The *Reading MD* dialog box will display with a list of names. Select the desired name or begin typing the name to narrow the list of options. Select **Assign**. The batch of selected studies will be updated with the new *Reading MD* assignment.



Editing Study Information

Actions may be taken on the study from the study detail page. Available actions are based on the user’s role and the state of the study. Hover over each icon to display the icon’s tooltip.

Visit, *Interpretation*, *Favorites*, and *Previous* group information on the patient and the study by individual panels. Expand or close each panel by selecting the arrow associated with the panel label. (See screenshots below.) By default, panels will be displayed or

hidden when the study is opened based on user-role. **Note:** The *Previous* panel will only be displayed when a previous ECG is displayed for comparison.

Open Panels

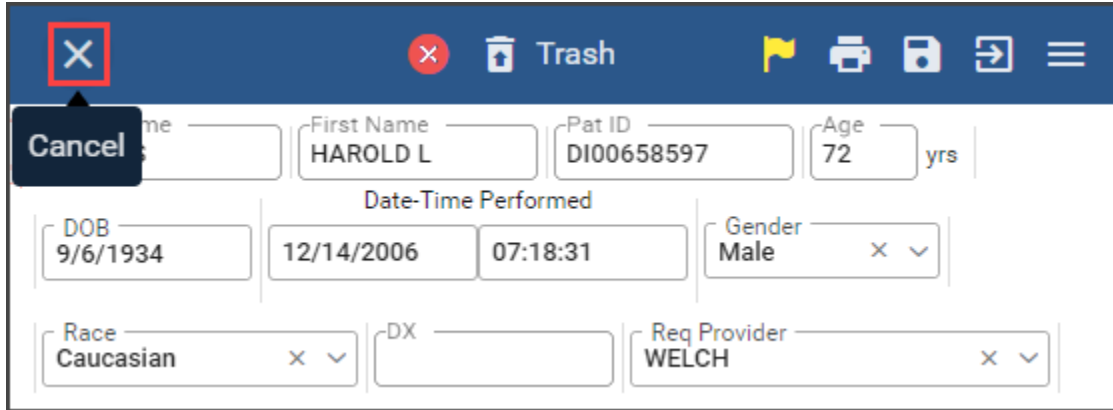
Closed Panels

Study Page Icons

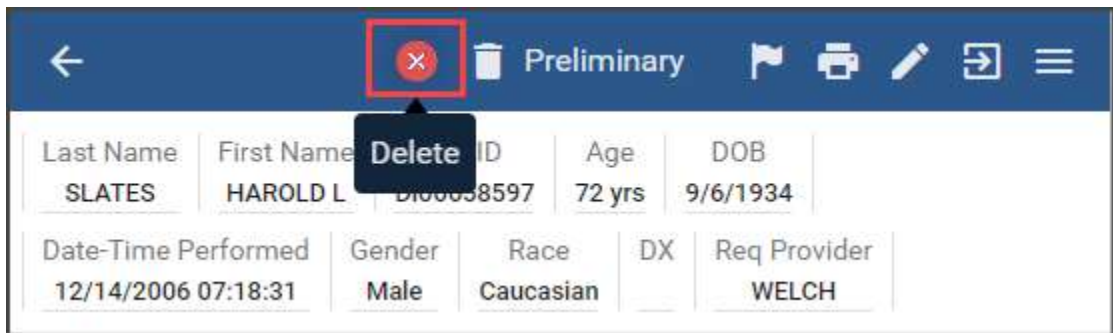
Back Arrow: Select to return to the Inbox. This icon is only displayed when the study is in view mode.

Cancel: Select to return to the Inbox and optionally discard any demographic edits or interpretation edits. If modifications have been made to the demographic data or interpretation data, a dialog box will appear with a warning, “*Discard unsaved changes?*” Selecting “*Cancel*” will maintain edits, keep the study open, and allow the user to continue editing. Selecting “*Discard*” will delete any edits made to the demographic fields or

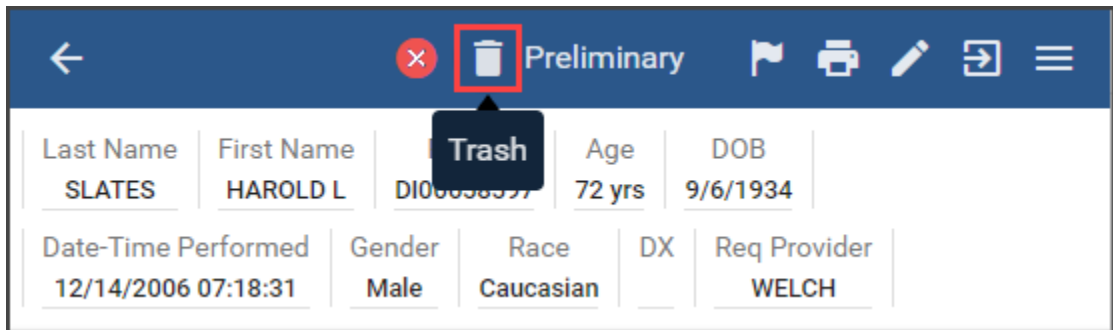
interpretation field and return to the Inbox. **Cancel** is only displayed when the study is in edit mode.



Delete: Select to permanently delete the study from the server. A warning dialog will appear, “Are you certain you wish to delete this report? The report will not be recoverable.” Select “Cancel” to cancel the action. Select “Delete” to permanently delete the study.



Trash: Select *Trash* to move the study to *Trash* status and remove it from the clinical workflow. If the study is linked to an order, it must be unlinked prior to moving to *Trash* status.



Flag: Select *Flag* to add the icon to the study in the Inbox and on the study detail page.



Print: Select *Print* to open a dialog box to print the study PDF. The print dialog will vary based on the printer settings and the browser used at login. **Note:** Set printer Scale to 100% to maintain standard 25mm/second, ECG paper speed.



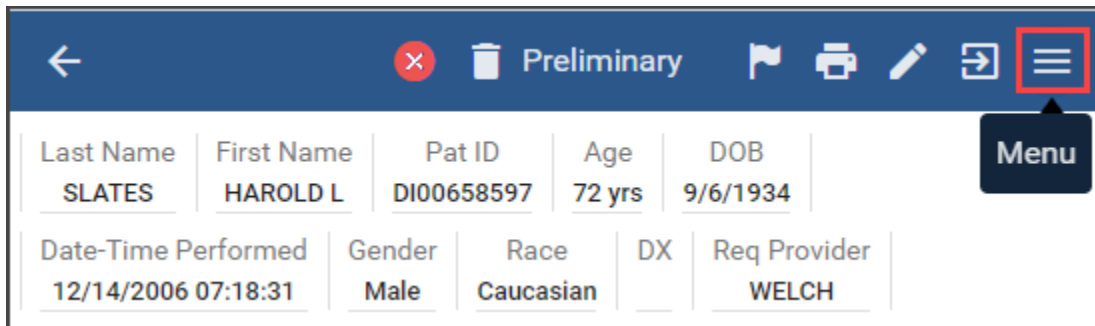
Modify: Select *Modify* to open the study for editing. This icon will only be visible when the study is in view mode.



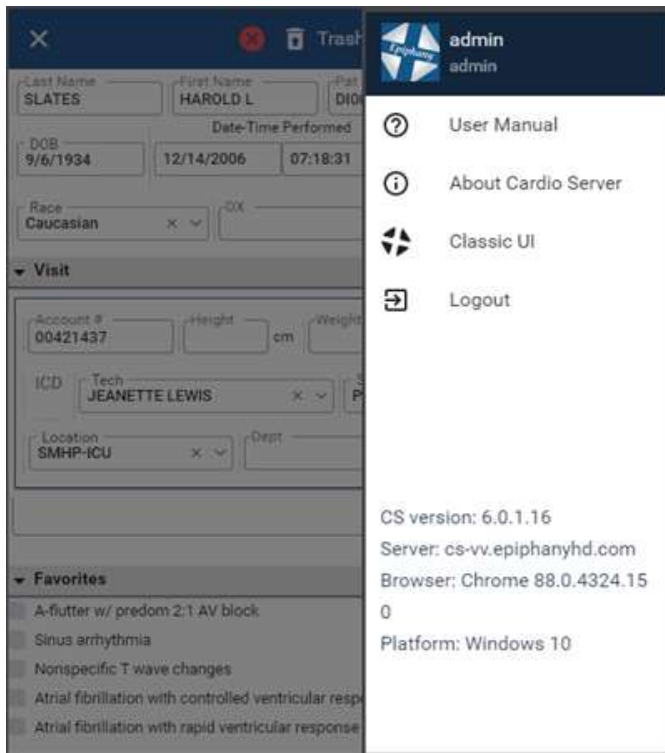
Logout: Select to log out of the application.



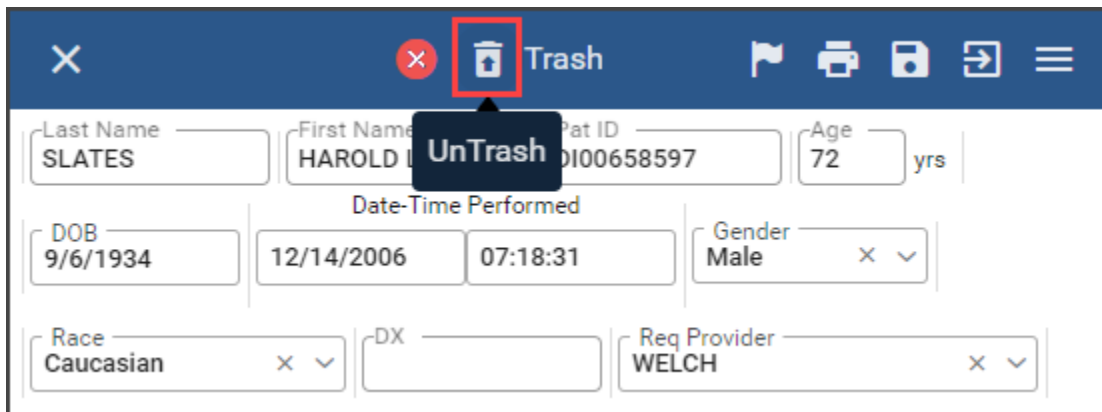
Menu: Select to open a panel containing additional information and actions.



- *User Manual:* Loads the E3 desktop User Manual with options to view, print, and download.
- *About Cardio Server:* Contains the CE mark and UDI barcode information.
- *Classic UI:* Allows a user to switch to the Cardio Server Classic mode. Cardio Server Classic has an **E3 UI** option that allows the user to return to the E3 desktop mode.
- *Logout:* Logs the user out of the E3 desktop application.
- *CS version:* Cardio Server software version number.
- *Server:* The server name.
- *Browser:* The current browser in use.
- *Platform:* The current platform in use.



UnTrash: Select *UnTrash* to move the study from *Trash* status to *Preliminary* status.



Status: The status label is displayed in the border above the demographic information on the study detail page. The following *Status* options are based on user’s role and may not be available to all users.

- *Preliminary* – study has not been linked to an order
- *Unconfirmed* – study has been linked to an order and is ready to be interpreted
- *Confirmed* – study has been interpreted and finalized by the provider
- *Read* – a preliminary read has been done
- *Stored* – legacy data has been migrated to Cardio Server or studies have been stored without an interpretation
- *Trash* – study has been removed from the clinical workflow for evaluation or future deletion **Note:** the study below is in *Trash* status

A screenshot of a patient data form. The form has a dark blue header bar with several icons: a close button (X), a red X, a trash can icon, and the word "Trash" in a white box. To the right are icons for a flag, a printer, a save icon, a refresh icon, and a menu icon. Below the header, the form contains several input fields: Last Name (SLATES), First Name (HAROLD L), Pat ID (DI00658597), Age (72) yrs, DOB (9/6/1934), Date-Time Performed (12/14/2006 07:18:31), Gender (Male), Race (Caucasian), DX, and Req Provider (WELCH). The "Trash" icon in the header is highlighted with a red rectangular box.

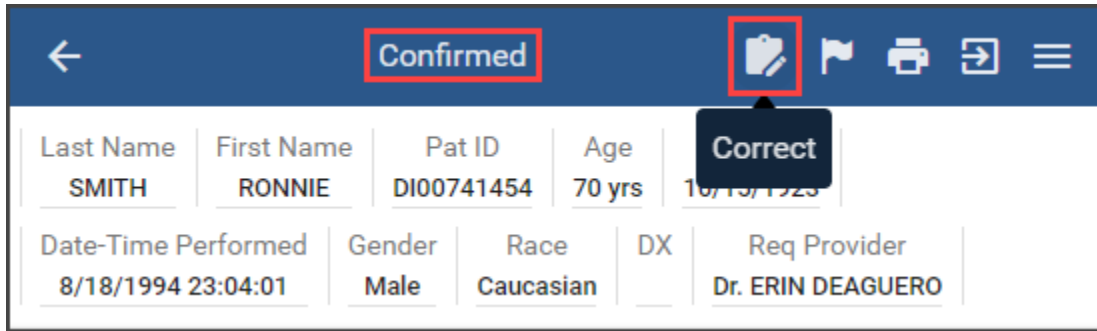
UnFlag: Select the *UnFlag* option to remove the flag icon.

A screenshot of the same patient data form. The "UnFlag" option, represented by a yellow flag icon, is highlighted with a red rectangular box. A dark grey tooltip with the text "UnFlag" is positioned over the icon. The rest of the form content is identical to the previous screenshot.

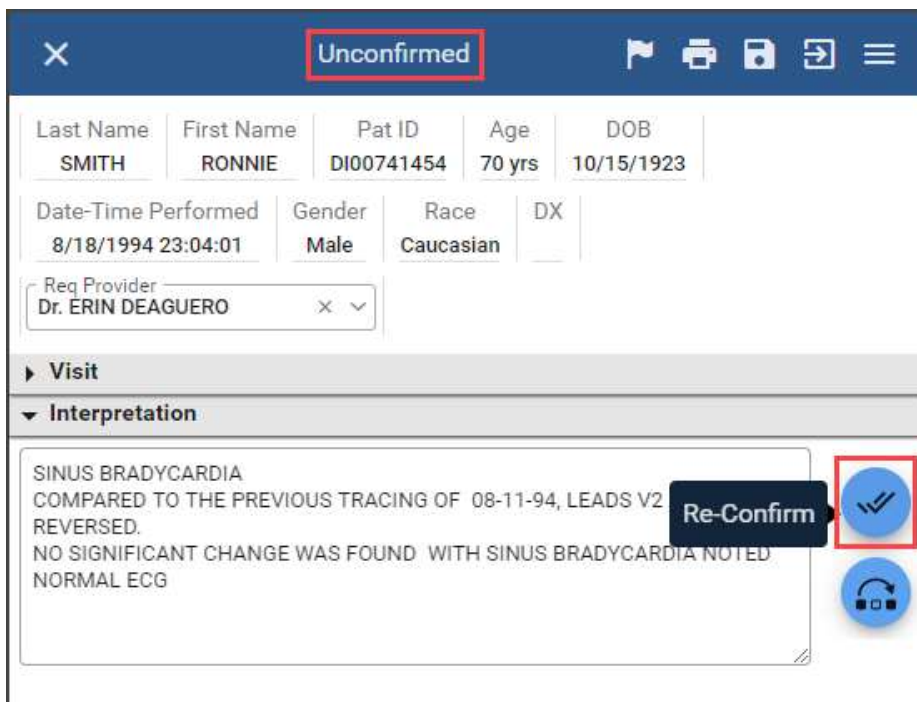
Save: Select Save to update and save edits made to the study.

A screenshot of the same patient data form. The "Save" icon, represented by a floppy disk icon, is highlighted with a red rectangular box. A dark grey tooltip with the text "Save" is positioned over the icon. The rest of the form content is identical to the previous screenshots.

Correct: This action returns a *Confirmed* study to the *Unconfirmed* status to allow editing of the interpretation. A corrected study must be re-confirmed in order to post the new result to the patient’s chart in the EMR.



Re-Confirm: This action is only available for a corrected study. **Re-Confirm** the study in order to post the new result to the patient’s chart in the EMR. **Note:** An order must be linked to the study to allow the study to be reconfirmed. If the original order has expired or is no longer available, a new order will be required prior to re-confirming.



EDITING STUDY INFORMATION

Demographic fields may be edited by specific usertypes with editing privileges. Tab through each field using the Tab key on the keyboard. Free-text in any open field that does not contain a drop-down arrow. Select a field with a drop-down arrow to display a list of options from which to choose. Demographic fields may be updated with order information when reconciled to an order and promoted to *Unconfirmed* status.

Note: If a user name is not available in the drop-down list for *Tech*, *Reading Provider*, *Req Provider*, or *Fellow*, verify the user has access to the study *Site*. User names will only appear in the list when the user has been granted access to the study *Site*.

Demographic Data

Last Name COX	First Name KATHERINE	Pat ID DI0000011	Age 46 yrs
Date-Time Performed			
DOB 12/18/1973	3/23/2020	06:14:00	Gender Female x
Race	DX reason1, reason2	Req Provider	
Visit			
Account #	Height 69 in	Weight 170 lb	RX Zocor CPT
ICD	Tech	Site MMC	
Location	Dept SICU	Room	
Reading Provider B Smith x	ED Physician		

Interpretation Edit

There are five options to add or change text in the *Interpretation* box.

1. **Free text** - Type or delete comments in the text area of the *Interpretation* box. Double-click on a word to highlight the single word or triple-click on a word to highlight the entire sentence. Select the Delete key on the keyboard to delete the highlighted area.
2. **Interpretation Assistant** - Type words or a portion of each word in the text area of the *Interpretation* box to display a list of matching statements from the Statement Library and user's Favorites list.
3. **Macros** - Type macros (*in ALL CAPS followed by the space bar*) in the text area of the *Interpretation* box to populate the field with the associated statement.
4. **Favorites** - Customized interpretive statements that are specific to the user. These statements are created in Cardio Server Classic UI.
5. **Voice recognition software** - Use a third-party, voice-recognition program to enter text into the *Interpretation* box. This functionality is not supported by Epiphany; contact the manufacturer for training or technical support.

Note: Options 2 and 3 must be enabled in the user's account under the **User Info** in Cardio Server Classic.

Interpretation Assistant

Interpretation Assistant is a statement search tool designed to assist the user in quickly finding interpretive statements. The predictive algorithm stores the user's choice of keywords and statement combinations. When enabled, this tool functions with *Macro* codes.

1. Select a study from the *Inbox*.
2. In the *Interpretation* box, type a word or a few letters representing the words

contained in the desired statement.

3. Statements matching the search criteria will be listed from the Statement Library and the user's Favorites list.



4. Insert statement by selecting or use the keyboard "Ctrl + Enter" to insert the highlighted statement.



5. After making modifications, select **Save**, **Confirm**, **Read** to update and save edits. This also saves the keyword/statement combination to the user's profile.

Note: Favorite statements may be added and edited in Cardio Server Classic.

The ECG *Interpretation* box may contain up to 13 lines of interpretation text. When the cursor is positioned below line 13, the *Interpretation* box will display a red outline and the message "**Text exceeds 13-line limit**" will display in red text at the bottom of the box. Lines in excess of 13 must be removed prior to saving or confirming the ECG.



Confirm/Confirm & Next

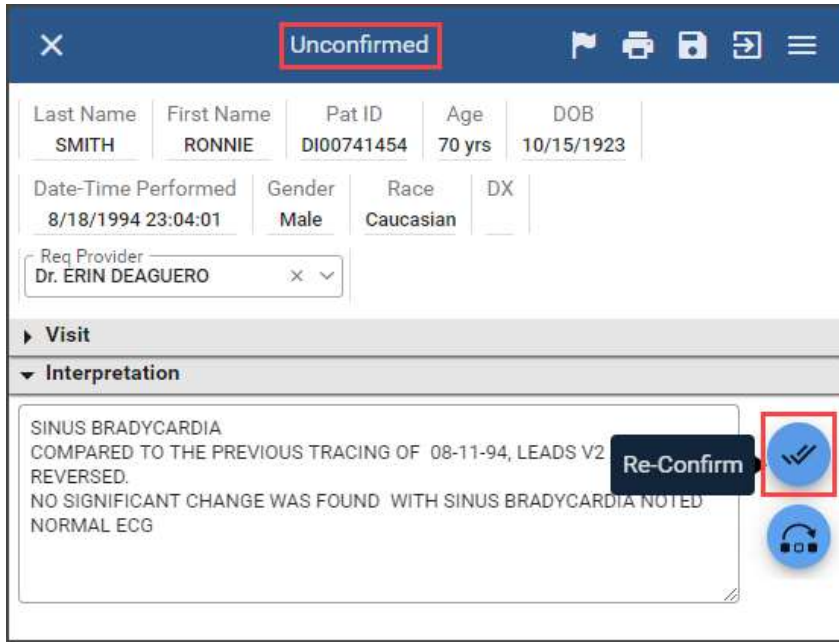
Confirm the edited study by selecting the **Check** icon to apply the Sign User’s electronic signature with a date and time stamp. This finalizes the study and moves it to *Confirmed* status. When configured, the confirmed result is posted in the EMR.

Confirm & Next, when enabled, will confirm the ECG and automatically load the next study in the list to be read.

Note: *Confirm & Next* workflow may be enabled under **User Info** in Cardio Server Classic.



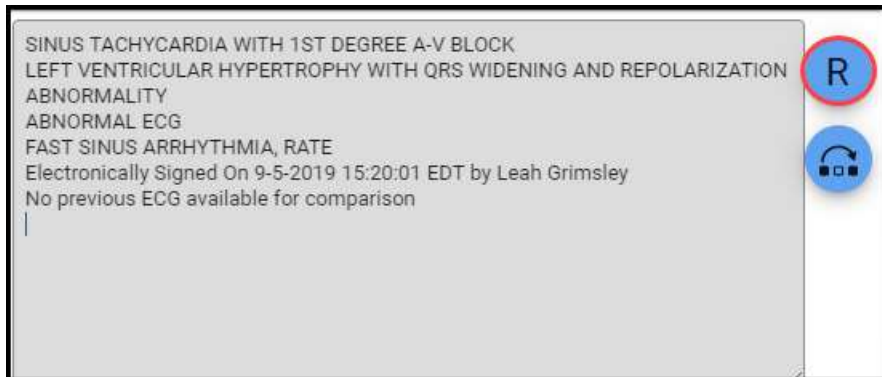
Re-Confirm action is only available for a corrected study. **Re-Confirm** the corrected study in order to post the new result to the patient’s chart in the EMR. **Note:** An order must be linked to the study to allow the study to be reconfirmed. If the original order has expired or is no longer available, a new order will be required prior to re-confirming.



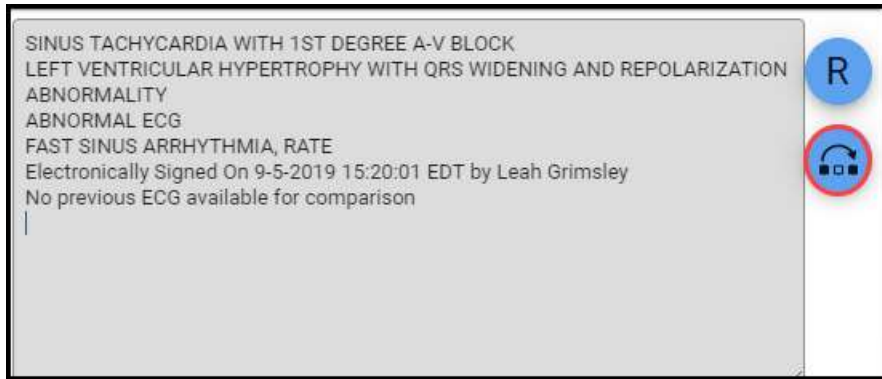
Read or **“Mark as Read”** allows a preliminary read to be performed by selecting the **R** icon to apply the user’s electronic signature with a date and time stamp. This moves the study to the *Read* status.

Read & Next, when enabled, will mark the ECG *“Read”* and automatically load the next study in the list to be read.

Note: *Read & Next* workflow may be enabled under **User Info** in Cardio Server Classic.



Skip allows the user to skip a study in the list of studies to be read. Selecting the *Skip* icon below removes the study from the user’s list and loads the next ECG in the Inbox list.

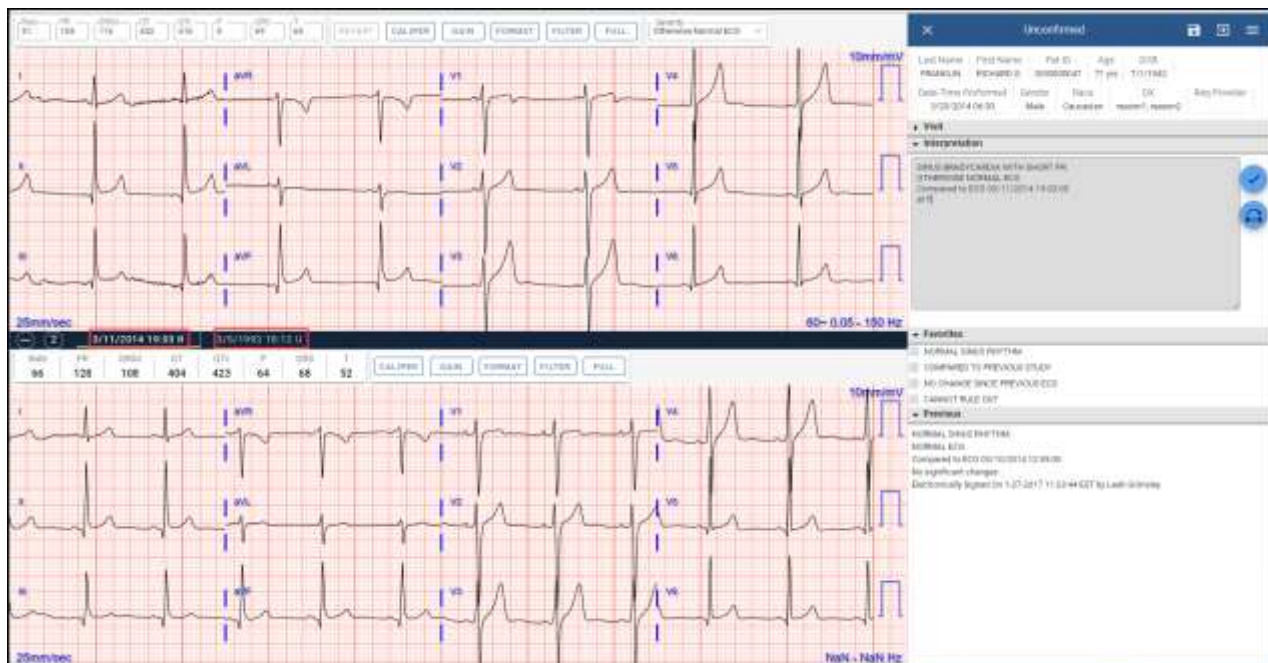


The total number of skipped studies will be displayed in the header at the top of the Inbox screen. Selecting the leftward arrow beside the number of skipped studies will restore the studies to the Inbox. The skipped studies will also be restored to the Inbox the next time the user logs in. See screenshot below.

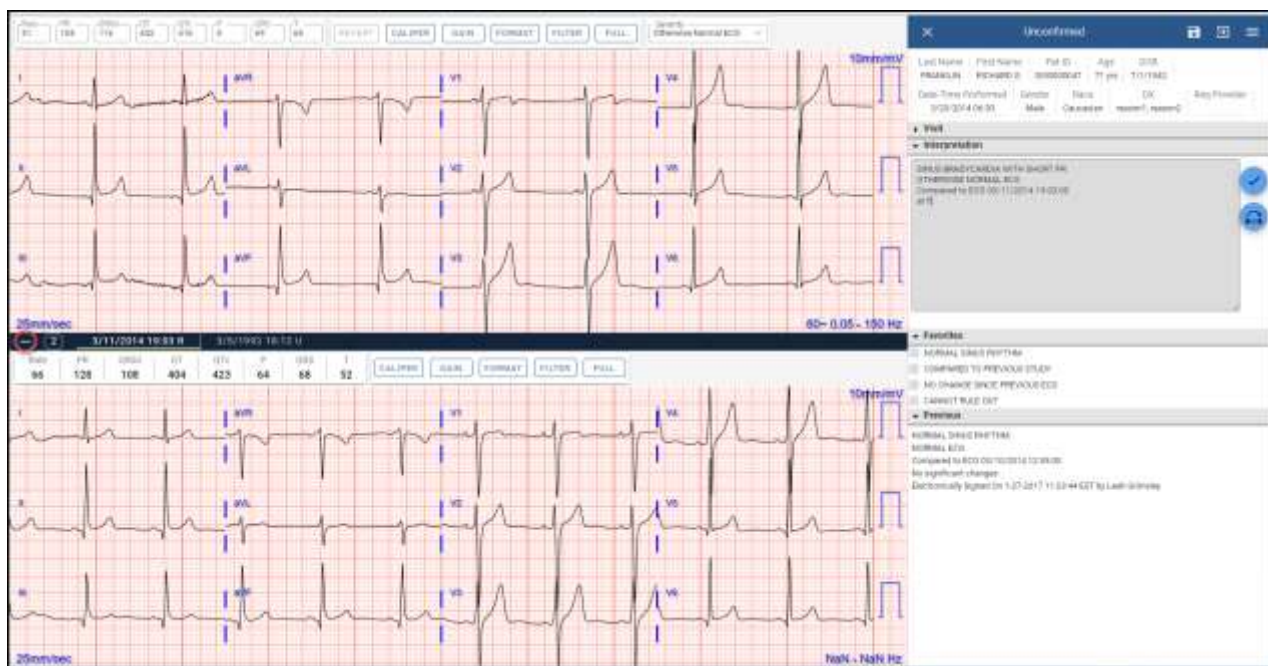
Inbox Settings	↻ 446 Results ↶ 3 Skipped			
Status	Date Performed	Patient Name	Patient ID	
Unconfirmed				
Site				
Ace, Mercy, Peace				
Search By				
Patient Name				
Type				
U	12/17/2006 05:22	TUCKER, LORRAINE	DI00408482	
U	12/17/2006 05:44	AHMED, SHERYL	DI00105019	
U	12/17/2006 06:37	ELLIS, KAREN	DI00051816	

Previous ECG Comparison

The most recent, *Previous* ECG automatically displays just below the current ECG. Additional previous studies will be listed by date and time tabs. Select date and time tabs to display previous ECGs in the lower window.

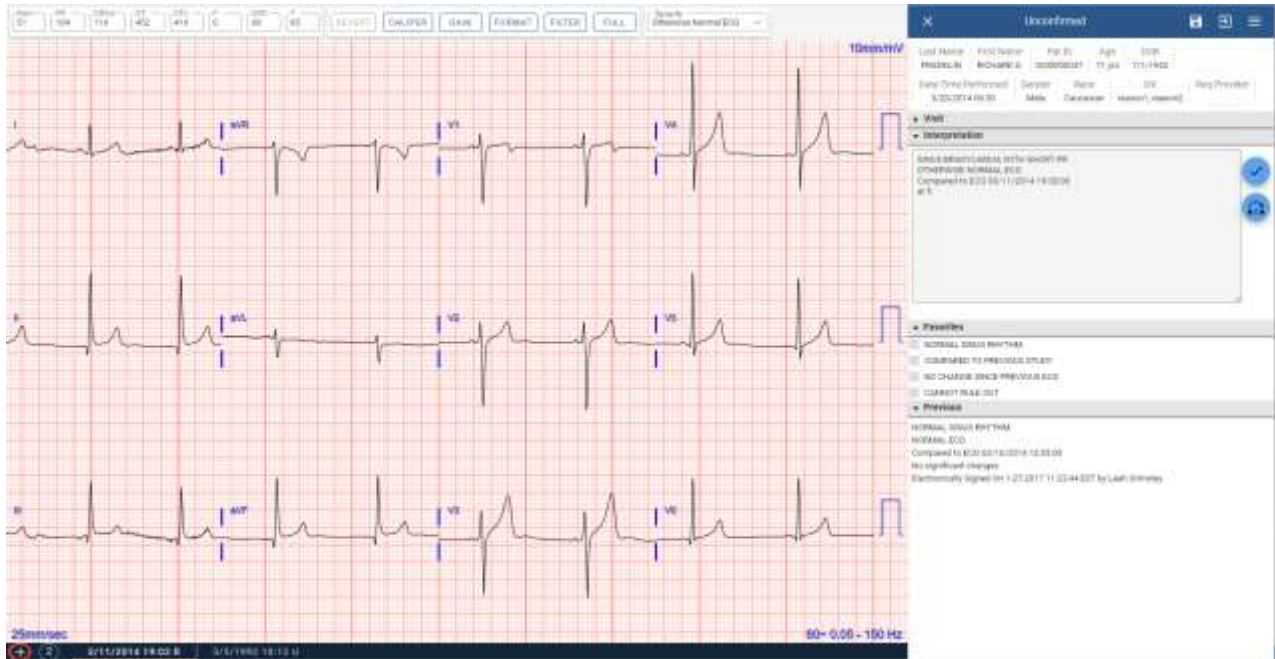


To hide the previous study and view only the current study, select the minus sign in the top, left of the previous study.



To display the previous study, select the plus sign.

Note: Display default for the previous ECG may be configured under **User Info** in Classic Cardio Server.



Calipers

Calipers perform three measurement functions—Rhythm, Interval, and Amplitude.

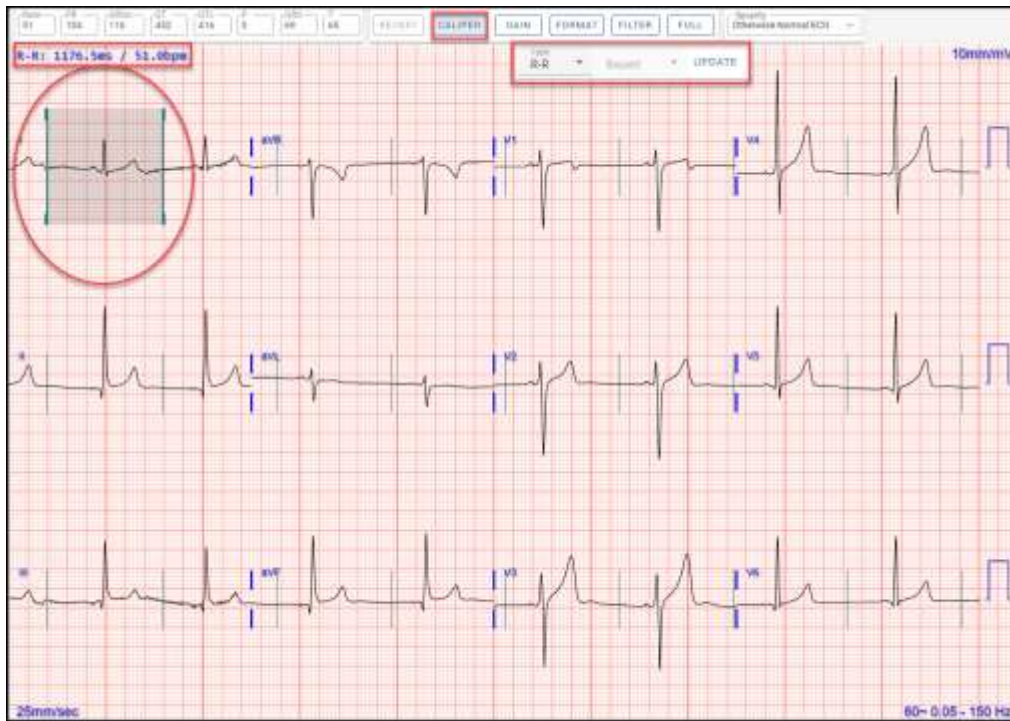
1. Rhythm calipers allow measurement of the RR intervals.
2. Interval calipers allow measurement of any waveform in the cycle, e.g., PR, QT, QTc-RR, and QRSd. (The correction formula default for QTc is *Bazett*, with options of *Fridericia*, *Linear*, and *Exponential*.)
3. Amplitude calipers allow measurement of waveform voltage and ST segment elevation or depression.

The Caliper setting may be found in the toolbar across the top of both the current and previous ECG studies.

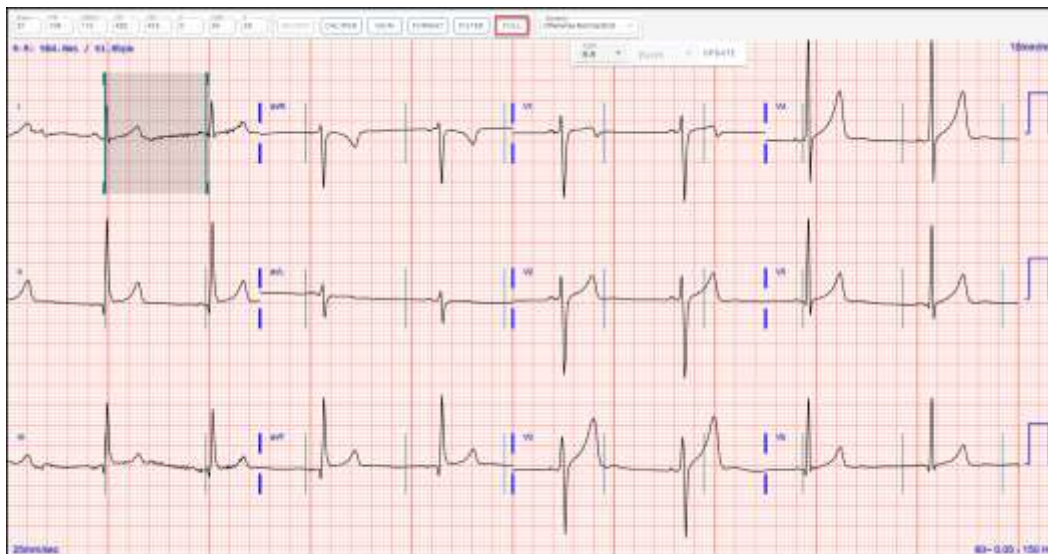


Select **Caliper** to open the caliper toolbar, display measurements, and display R-R calipers.

Note: Measurements are calculated from inside the caliper legs in the gray shaded area.

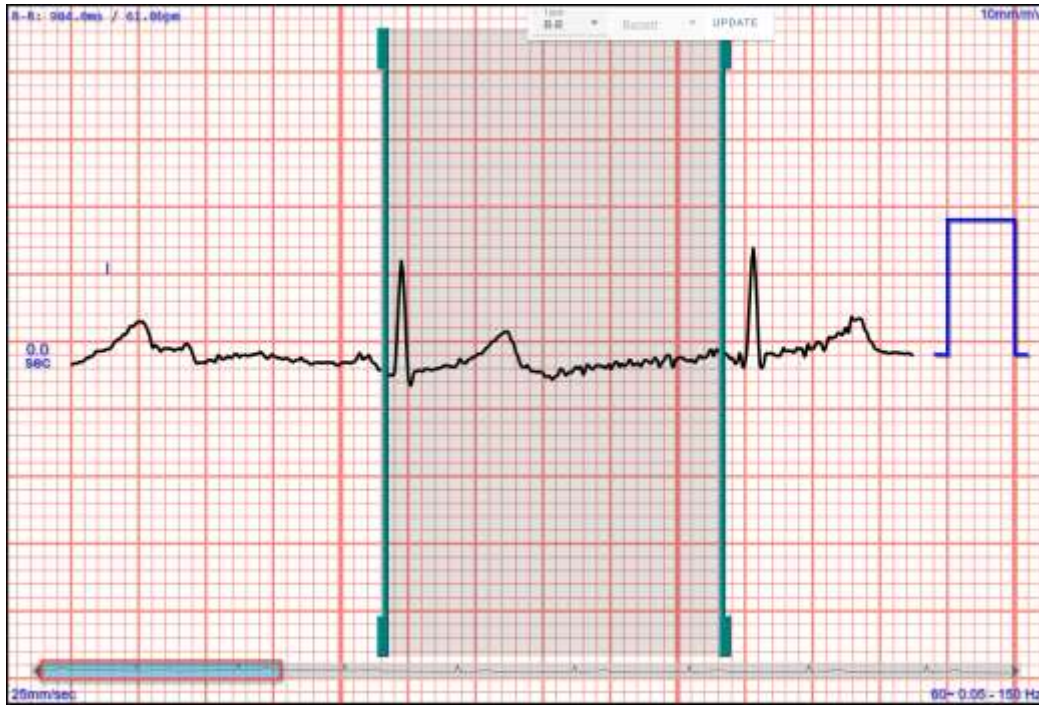


The calipers default to the *R-R* measurement obtained by the cardiograph algorithm and can be adjusted by the user. To adjust the calipers, left-click in the gray shaded area and drag left, right, up, or down. To adjust one caliper leg, left-click on the leg and drag left or right. Select **Full** on the ECG toolbar to expand the tracing to full screen.



Double-click on any lead to zoom in or zoom out on the lead. Alternatively, after clicking on the tracing, use the keyboard shortcut by pressing “Z” to perform the same zoom functions on Lead I. Up and down arrow keys will display a different lead. While in lead

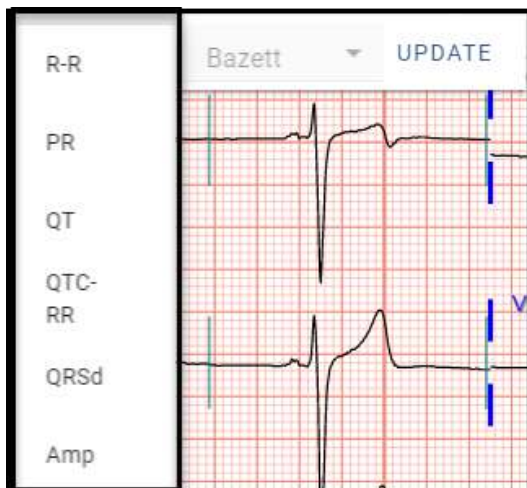
zoom, press “+” to increase magnification, and “-” to reduce magnification. Click on the blue highlighted bar at the bottom of the screen and drag left or right to scroll to a different area of the lead. Arrow keys will also move the tracing left or right.



Select **Update** on the caliper toolbar to update the original measurement to the manual measurement. To save the updated measurements, select **Confirm**, **Read**, or **Save**.



Select a different interval for measurement by clicking the *R-R* drop-down arrow on the caliper toolbar and choose from the list.



Select *QTc-RR* to calculate the R-R interval used for the QTc calculation. When selected, the interval will be used for the QTc calculation only and will not update the overall heart rate value of the 10-second ECG. After obtaining this measurement, select *QT* from the drop-down list and proceed with the measurement.



The default correction formula is *Bazett* and can be modified by selecting from the *QTc-b* drop-down menu. The *QTc* tab is available only when *QT* or *QTc-RR* is selected.



ECG TOOLBAR FUNCTIONS

The ECG toolbar provides tools to measure the ECG, toggle pacing artifact off/on, modify gain, modify format, modify filters, and display full-screen ECG.



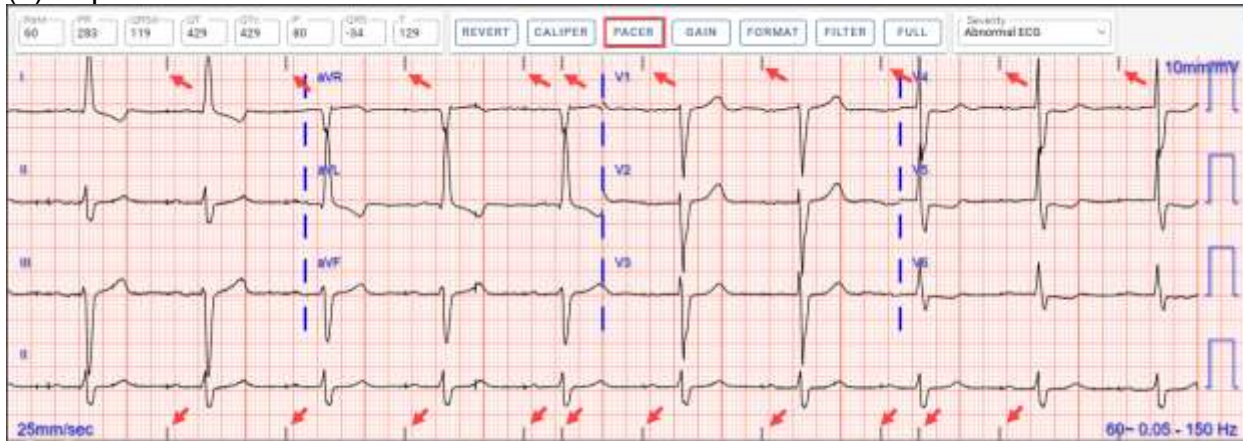
Select **Caliper** to open the caliper tool. (Detailed instructions provided in **Using Calipers on ECGs**.)



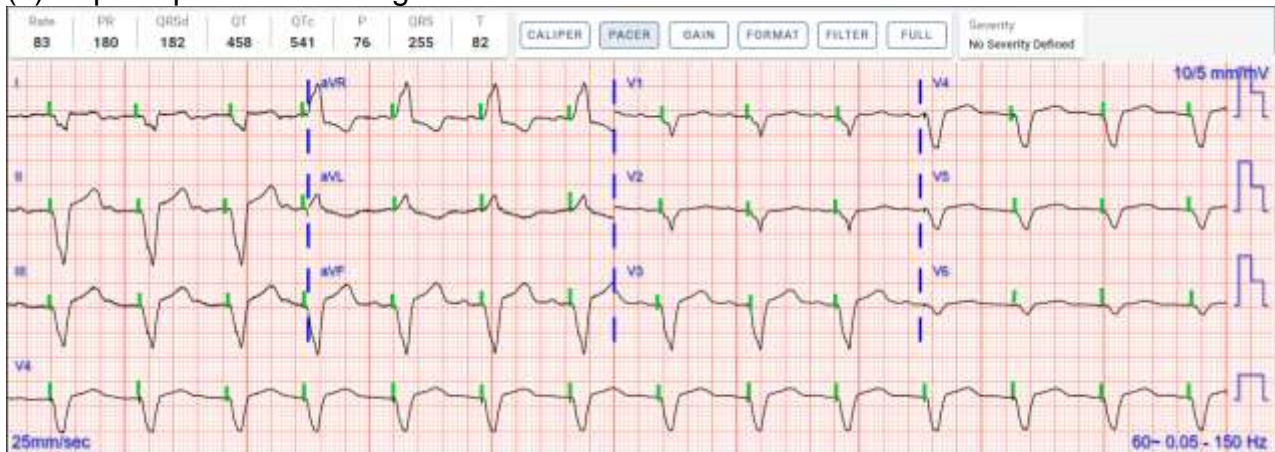
Select **Pacer** to toggle pacing artifact off and on. The Pacer option will only be present when pacing artifact has been transmitted by the device. The location of the pacing artifact is determined by the signal transmitted from the cardiograph algorithm.

Note: Pacing artifact display may be configured in one of three options: (1) tick marks at the top and bottom of the canvas; (2) green spikes superimposed on the ECG; or (3) disabled, with no indication of pacing. This is a global setting and determined by the local system administrator.

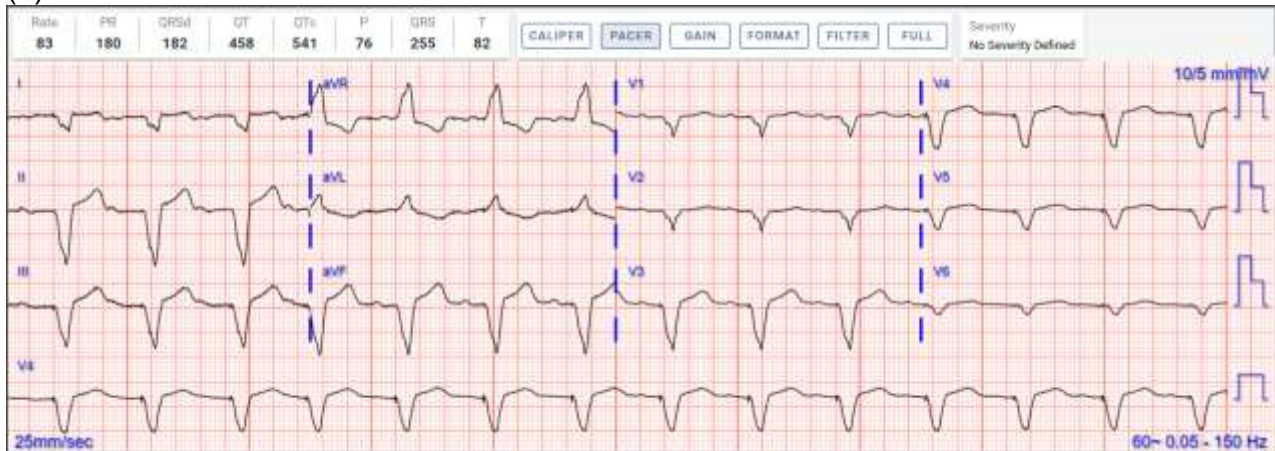
(1) Top/bottom of canvas



(2) Superimposed on tracing



(3) Disabled

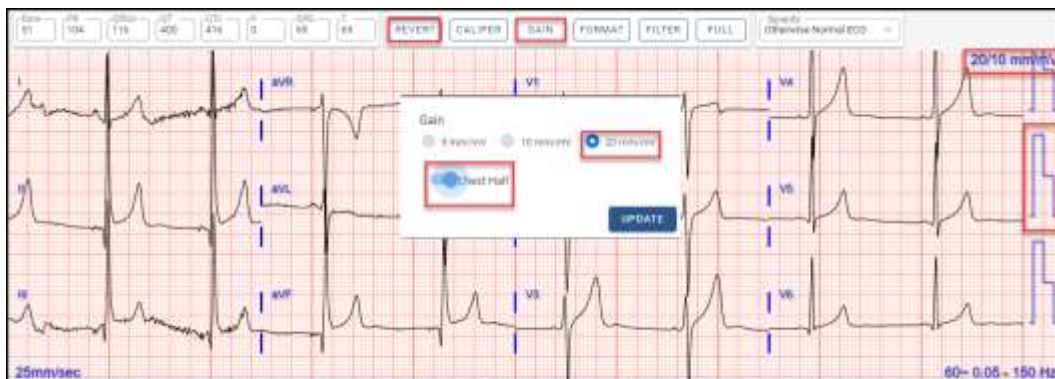


Select **Gain** to access options for increasing or decreasing the ECG gain.

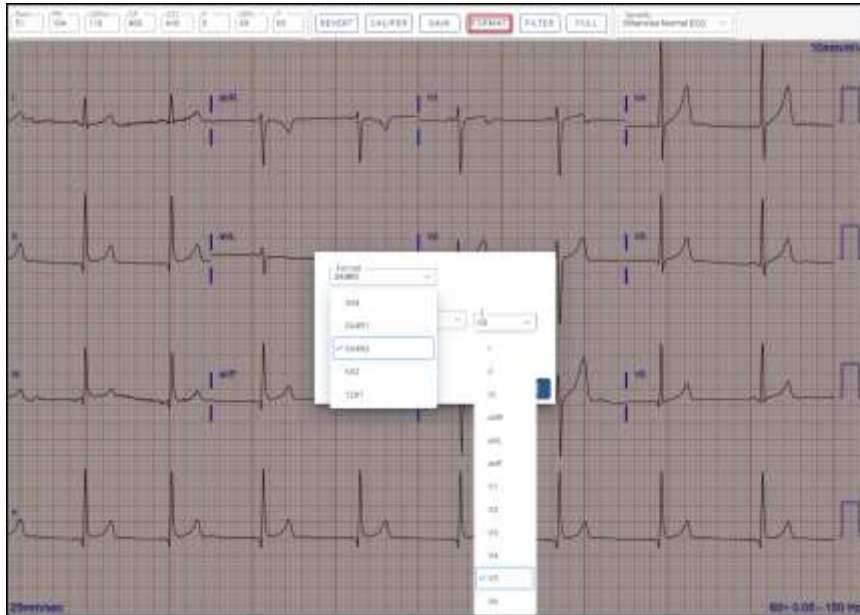


After making the selection, select **Update** to update the tracing. The calibration signals and mm/mV value will reflect the new gain settings. To restore the previously saved settings, select **Revert** prior to **saving**. The following actions will save the new settings: **Confirm**; **Read**; or **Save**.

Note: After selecting one of the above actions, **Revert** will no longer restore the previously saved settings.



Format allows the user to choose the ECG format and rhythm-lead options.



Make lead selection and select **Update** to update the tracing. To restore the previously saved settings, select **Revert** prior to **saving**. The following actions will save the new settings: **Confirm**; **Read**; or **Save**.

Note: After selecting one of the above actions, **Revert** will no longer restore the previously saved settings.

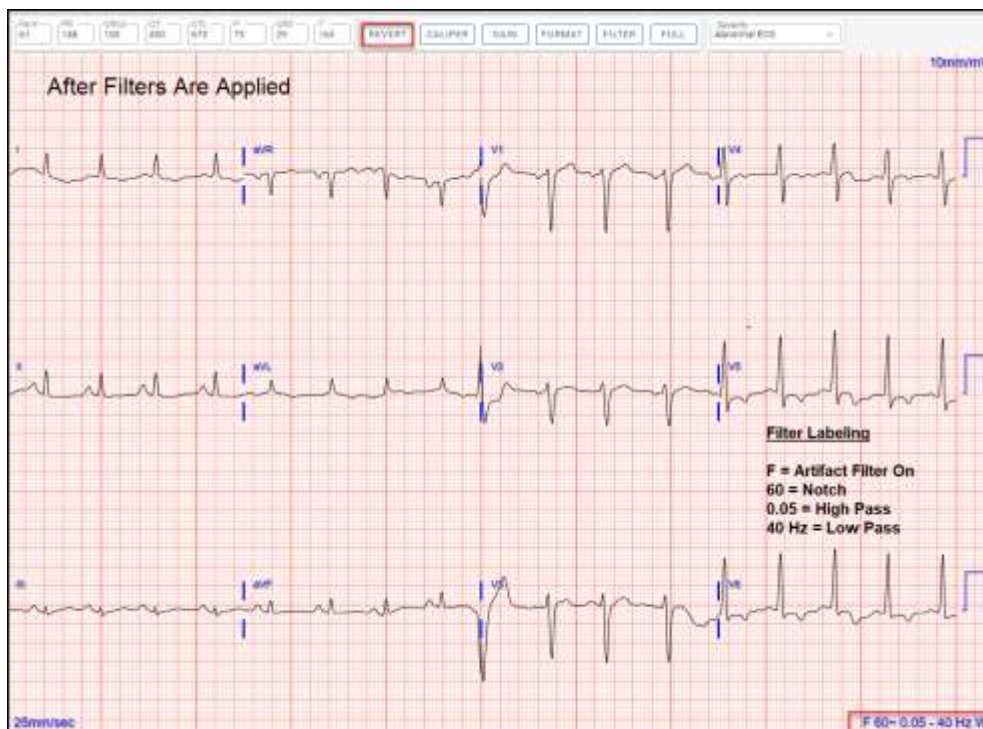
Filter allows a user to modify settings for *High Pass*, *Low Pass*, *Notch*, *Artifact*, and *Wander* filters.



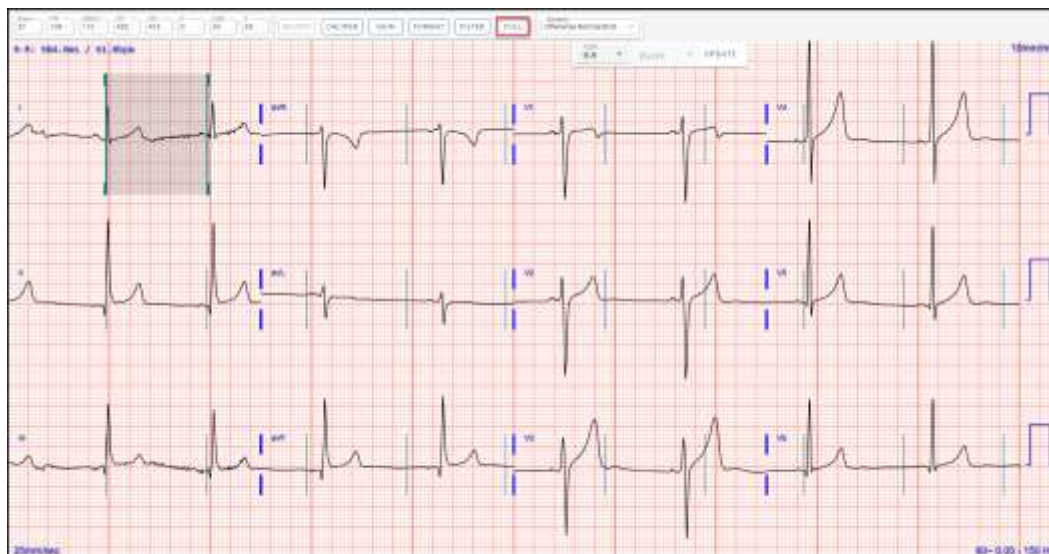
Make filter selections and select **Update** to update the tracing. The filter settings will be displayed in the lower, right corner of the ECG. To restore the previously saved settings,

select **Revert** prior to **saving**. The following actions will save the new settings: **Confirm**; **Mark as Read**; or **Save**.

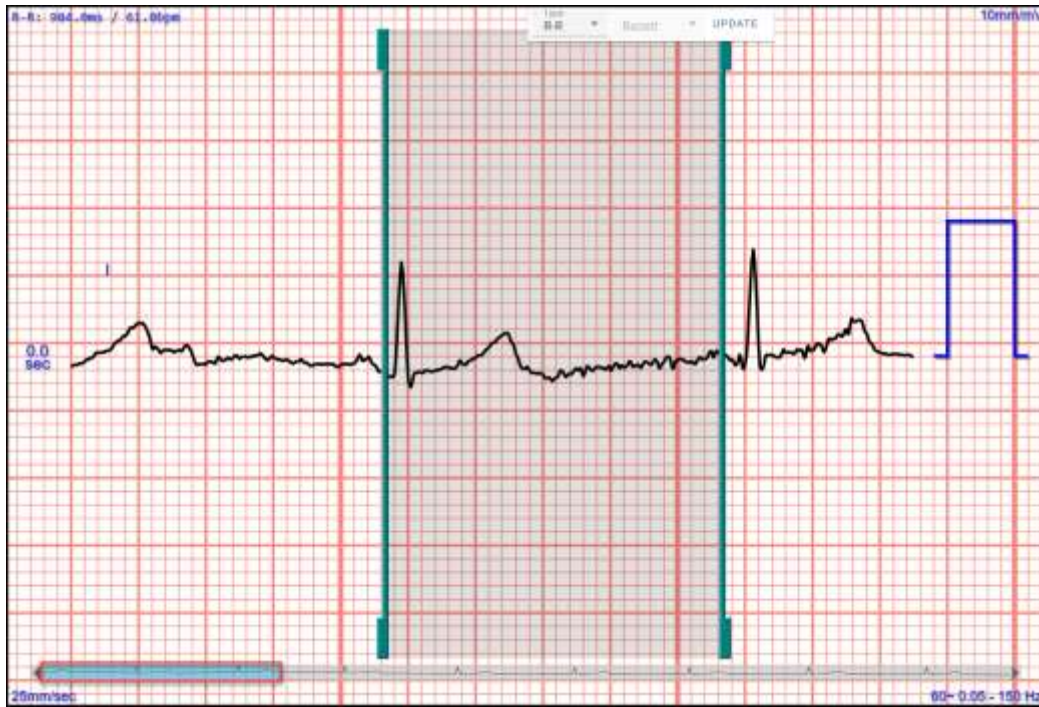
Note: After selecting one of the above actions, **Revert** will no longer restore the previously saved settings.



Select **Full** on the ECG toolbar to expand the tracing to full screen. Alternatively, after clicking on the tracing, use the keyboard shortcut by selecting "F" to expand to full screen or exit full screen.



Double-click on any lead to zoom in or zoom out on the lead. Alternatively, after clicking on the tracing, use the keyboard shortcut by pressing “Z” to perform the same zoom functions on Lead I. Up and down arrow keys will display a different lead. While in lead zoom, press “+” to increase magnification, and “-” to reduce magnification. Click on the blue highlighted bar at the bottom of the screen and drag left or right to scroll to a different area of the lead. Arrow keys will also move the tracing left or right.



Revert allows the user to restore the last, saved settings. **Revert** is an active option after editing **Gain**, **Format**, or **Filter** settings. **Revert** will no longer restore the previously saved settings after selecting **Confirm**; **Mark as Read**; or **Save**.

Active:



Inactive:



CRITICAL STATEMENT NOTIFICATION (CSN) (Option)

The **CSN** designation indicates a specific statement has been detected in an ECG. It places the designated ECG at the top of the **Inbox** and inserts a statement in the study interpretation. Finally, CSN triggers an automatic *Messenger* notification via email or text, e.g., “CSN study to be read.”

Note: CSN is **not** an alarm; instead, it highlights ECGs containing specific statements from the cardiograph algorithm and notifies users of the finding.

Critical Statement Notification enables Cardio Server to recognize key ECG statements transmitted from the cardiograph. Qualifying statements must be identified by the customer. Statements meeting pre-configured, system criteria will trigger the CSN workflow. There are four categories of conditions that can be recognized when associated with qualifying statements:

- Acute MI
- Very High Heart Rates
- Acute Ischemia
- Complete Block

Criteria for notification are based on the exact wording of the statement generated by the cardiograph algorithm. When the criteria are met, the following will occur:

- ECG is moved to the top of the *Inbox List*.
- ECG demographic background is red with an “!” icon.
- The statement that correlates with the trigger condition is inserted above the ECG interpretation, e.g., *****ACUTE MI*****.

Status	Date Performed	Patient Name	Patient ID	Site	Reading Provider	Location
U	3/5/1992 18:11:00	CRT, TEST, MI	CRT1STMT	Mercy		
U	1/1/2007 00:34:47	YOUNGBLOOD, SHELDON B	DI00603642	Central-2	sign2 user	CDU-IP
U	1/9/2007 20:09:07	SPENCE, DEBBERA I	DI00380471	Hope-2	sign2 user	SONJ-ICU
U	1/9/2007 10:30:47	FISHER, TAMIKA	DI00482462	Central-6	ZEDLA ROBINSON	SP-ED
U	1/7/2007 06:00:39	PERRODIN, HARJYO S	DI00282377	Grace-7	ZEDLA ROBINSON	ETL-IP
U	12/27/2006 15:29:02	MCDUGLA, JEFFREY	DI00745495	Peace-9	ZEDLA ROBINSON	SNMP-SDS

***** ACUTE MI *****
 INFERIOR INFARCT
 ABNORMAL ECG
 NO PREVIOUS ECGS AVAILABLE

- When configured, a notification email or SMS text will be delivered based on a pre-configured *Messenger* rule.

Note: SMS-text capability must be supported by your carrier to use this option.

CSN classification is determined when the ECG is initially received in Cardio Server.

INTELLIGENT SERIAL COMPARISON (Option)

Epiphany’s Intelligent Serial Comparison provides additional information to the reading physician on changes between the current ECG and the previous ECG, as defined by the established criteria of the institution. The most recent ECG is used for comparison if it matches the patient ID and patient name.

Features:

- Utilizes physician’s *Confirmed* ECG interpretive statements from the previous ECG to improve accuracy.
- Physicians can use any data-entry method they prefer including dictation for later transcription, free text, drop-down menus, custom favorites, macros, and voice recognition.
- If the previous ECG has not been *Confirmed*, the interpretation from the cardiograph will be used for comparison.
- Utilizes the existing cardiograph algorithm and interpretive statements for the current ECG.
- Is customizable; able to learn physician’s statements to improve performance; able to learn common, repetitive typographical errors too.
- Can learn unrecognized, new interpretive statements.
- Works with all cardiograph manufacturers and all migrated legacy data. Legacy sampling rates are supported.

Serial Comparison is only performed when the following ECG criteria are met:

If no previous ECG exists, the Serial Comparison statement will read, “No previous tracing available for comparison.”

- The ECGs used for comparison must have interpretive statements present in the interpretive field.
- If the previous ECG has been *Confirmed* with a physician’s interpretation, the physician’s interpretation will be utilized for serial comparison reporting.
- Should an ECG not reconcile or match an existing patient in Cardio Server, the statement “No previous tracing available for comparison” is generated.
- All standard 12-lead ECGs are available to be utilized for serial comparison. This includes migrated, legacy data and new, proprietary data from multiple vendors’ cardiographs.

Logic: There are four ways for phrases to be reported in Intelligent Serial Comparison.

Standard: Used for the most phrases, including: Ventricular premature complex(es), Short P-R interval, Right bundle-branch block, etc.

- When a phrase occurs in both the previous tracing and the current tracing, it is **not noted** as “still present.”
- When a phrase occurs in the previous tracing and not in the current tracing, it is noted as “no longer present.”

- When a phrase occurs in the current tracing and not in the previous tracing, it is noted as “now present.”
- When a phrase is conditional (“possible,” “consider,” etc.) in only one tracing it is not noted.

Previous Only: Used to identify statements no longer present such as rhythm statements where the current tracing has a new rhythm.

- When a phrase occurs in both the previous tracing and the current tracing, it is not noted.
- When a phrase occurs in the previous tracing and not in the current tracing, it is noted as “no longer present.”
- When a phrase occurs in the current tracing and not in the previous tracing, it is not noted.
- When a phrase is conditional (“possible,” “consider,” etc.) in only one tracing it is not noted.

New Only: Used to identify new statements of less significant clinical value; now only used for the phrases “Low voltage QRS” and “RSR’ in V1 or V2,” these statements are expected to expand with database growth.

- When a phrase occurs in both the previous tracing and the current tracing, it is not noted.
- When a phrase occurs in the previous tracing and not in the current tracing, it is not noted.
- When a phrase occurs in the current tracing and not in the previous tracing, it is noted as “now present”.
- When a phrase is conditional (possible, consider, etc.) in only one tracing it is not noted.

Always: Used for Myocardial infarction, ST-T wave changes, and T wave changes, expected to expand with database growth.

- All conditional phrases, whether in either the previous tracing or the current tracing, are noted.
- When a phrase occurs in the previous tracing and not in the current tracing, it is noted as “no longer present.”
- When a phrase occurs in the current tracing and not in the previous tracing, it is noted as “now present.”
- When a phrase is in both tracings, it is noted as “still present.”

Other rules that impact reporting:

- If all phrases in Intelligent Serial Comparison qualify as “still present,” “No significant changes since previous tracing (with the date and time stamp)” will be noted.
- Phrases including “and,” “or,” “with,” etc. are broken into two separate phrases for analysis.

- Some phrases may have little significance and are ignored; currently only “early transition.”
- Typos or new phrases that do not match existing categories in the database are neither noted nor reported. Typos and new phrases are, on the other hand, logged into the database for future lexicon harvests to improve performance.
- All of the various myocardial infarct statements are reported as “Myocardial infarct finding.”
- All ST (T) wave statements are reported as “ST (T-wave) deviation.”
- T-wave statement variations are reported as “T-wave abnormality.”
- Left atrial abnormality, right atrial abnormality, bi-atrial abnormality, and atrial conduction abnormalities are reported as “atrial abnormality.”

Recommendations to Physicians:

The intelligence in Epiphany’s Intelligent Serial Comparison comes from the physician’s interpretation of the previous ECG. In order to achieve the best serial comparison results, it is generally better to create bullet statements vs. prose paragraphs. The following simple interpretation techniques are suggested.

- Utilize a separate line for each interpretive statement.
- Avoid combining two statements.
- Avoid lengthy sentences.
- Avoid unusual punctuation such as quotation marks for emphasis.
- Only utilize the more common/obvious abbreviations such as LVH, RBBB, MI, LAFB, etc.
- Leave a space between abbreviations, slash marks, hyphens, etc. and the next word in your phrase to avoid being detected as a run-on sentence.

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