Option	Function
Graph Setup	NOTE When changing the <i>Graph Setup</i> options for admitted patients, the changes do not take effect until the
	patients are discharged.
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Monitor Setup</i> > <i>Graph Setup</i> .
Default Locations for this	Set the print location for <i>Manual</i> , <i>Alarm</i> and <i>Print Window</i> .
	NOTE
	These default locations are only used for telemetry beds and determine where patient data prints for either manual or alarm conditions. Since a telemetry patient is not linked to a patient monitor, these defaults are necessary to specify the destination for alarm and manual graph printouts.
Waveforms	Designate the primary ECG lead for printing and enable or disable printing from subsequent ECG leads.
	<i>ECG 1</i> : Designate the primary ECG lead for printing. Lead II is the default.
	<i>Waveform 2</i> to <i>4</i> : Choose other ECG leads to print or choose <i>Off</i> to disable printing an ECG lead. Choices are: <i>Off, I, II, III, V, aVR, aVL</i> and <i>aVF</i> .
	Selecting option V indicates the V lead being monitored, e.g., V2.
	NOTE
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Monitor Setup</i> > <i>Graph Setup</i> .
Transmitter Graph	Turn on or off the <i>Transmitter Graph</i> printing.
	When this option is set to On , a telemetry patient can initiate a graph by pressing the Graph button on the transmitter. When this option is set to Off , graphs cannot be initiated at the transmitter.
	This option sets the unit default for all telemetry patients admitted to the CIC Pro center.
	NOTE
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Monitor Setup</i> > <i>Graph Setup</i> .
Alarm Graph	Turn on or off <i>Alarm Graph</i> printing. Choices are: <i>Always on</i> or <i>Always off</i> . On is the default.
	This option sets the unit default for all patients admitted to the CIC Pro center. It cannot be changed on an individual patient basis.

Option	Function
Event Marker Graph	Turn on or off <i>Event Marker Graph</i> printing. <i>Off</i> is the default.
	This option allows you to select whether a graph will be printed when a patient's event is marked using the event marker button on the transmitter.
	NOTE This feature is not applicable to all transmitters.
Display Lead	Set the primary ECG lead for display in the patient's waveform window. Choices are: <i>I</i> , <i>II</i> , <i>III</i> , <i>V</i> , <i>aVR</i> , <i>aVL</i> and <i>aVF</i> .
	Lead II is the default. Selecting option V indicates the V lead being monitored, e.g., Va or Vb.
	NOTE
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Monitor Setup</i> > <i>ECG</i> .
Arrhythmia	Enable or disable an arrhythmia processing program. Choices are: <i>Full</i> , <i>Lethal</i> , and <i>Off</i> . Full is the default.
	Selecting Off means arrhythmia detection remains off until you choose another option.
	NOTE
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Monitor Setup</i> > <i>ECG</i> .
Lead Analysis	Designate Single-Lead or Multi-Lead analysis for ECG and arrhythmia analysis. Multi-Lead is the default.
	NOTE
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Monitor Setup</i> > <i>ECG</i> .
ST Analysis	Enable or disable ST Analysis . Choices are: On or Off . Off is the default.
	NOTE
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Monitor Setup</i> > <i>ECG</i> .
Va Lead Vb Lead	Set the default for the V leads that will be monitored in these positions. A 6-leadwire set is required for multiple V-lead monitoring. Choices for <i>Va</i> : <i>V1</i> to <i>V6</i> . Choices for <i>Vb</i> : <i>V2</i> to <i>V6</i> .
	V1 is recommended for arrhythmia detection.
	V5 is recommended for ST depression monitoring ¹ .
	NOTE
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Monitor Setup</i> > <i>ECG</i> .
	NOTE
	Correctly labelling V leads is important to facilitate correct ECG analysis when viewing real-time waveforms, histories or printouts.

Option	Function
Detect Pace	Enable or disable pacer detection. Choices are: Pace 1 , Pace 2 , and Off . Off is the default.
	NOTE
	Selecting <i>Off</i> turns pacemaker detection off. It does <i>not</i> perform pacemaker detection. <i>Pace 1</i> or <i>Pace 2 must</i> be used with pacemaker patients. See Monitoring pacemaker patients on page 7-13.
	NOTE
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Monitor Setup</i> > <i>ECG</i> .
PDS	Enable or disable use of the Patient Data Server (PDS).
	The PDS is a rack-mounted server that collects graphic trend and event data from data acquisition devices on the Unity MC Network. Data may be collected from both hardwired and wireless devices and returns the data to a CIC Pro center for viewing, This data is stored in the PDS for 72 hours, providing temporary patient data history.
	Additionally, the data is stored under a patient's PID so that as the patient is moved from one data acquisition device or care unit to another, the new data is appended to the patient's record, creating one continuous 72-hour string of data.
Patient Age	Set Patient Age . Choices are: 0-2 Years , 3-11 Years , 11-13 Years , and Adult . See Patient age on page 4-11.
	NOTE
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Admit</i> .
Transmitter Alarm Pause	Enable or disable transmitter alarm pausing. Choices are: <i>Enable, Disable</i> or <i>Off</i> .
	This option sets the unit default for all telemetry patients admitted to the CIC Pro center.
	NOTE
	Temporary changes may be made for a specific patient via the single patient viewer > <i>Alarm Control.</i>
Alarm Pause Breakthrough	Turn on or off <i>Transmitter Alarm Pause</i> breakthrough. Choices are: <i>Always On</i> or <i>Always Off. Always On</i> is the default.
	This option sets the unit default for all telemetry patients admitted to the CIC Pro center. It cannot be changed on an individual patient basis.
Event Marker	Turn on or off Event Marker alert. Off is the default.

¹Barbara J. Drew, RN, PhD, FAAN (2000). Value of Monitoring a Second Precordial Lead for Patients in a Telemetry Unit, GE Medical Systems (order document number M04243ME0)

Patient age

WARNING

INCORRECT ALGORITHMS, ARRHYTHMIA PROCESSING AND CALCULATIONS BASED ON PATIENT AGE — After manually updating or automatically retrieving patient demographic information from a network database, *always* confirm that the entered patient's date of birth matches the patient's actual date of birth. Otherwise the appropriate age-related algorithms, arrhythmia detection, and calculations will not be applied.

NOTE

The *Telemetry Unit Defaults* tab sheet settings take precedence when the *Patient Age* chosen in the *Admit* tab sheet and the age default setting from the *Telemetry Unit Defaults* tab sheet match.

When the ages do not match, the Admit tab sheet age setting takes precedence.

The options found in the pull-down list for the *Patient Age* field are:

- 0-2 years
- 3-10 years
- 11-13 years
- *Adult* (factory default selection)

The *Patient Age* setting chosen in the *Telemetry Unit Defaults* tab sheet affects the alarm settings.

Telemetry Unit Defaults Tab Sheet Setting	Age Chosen In The Admit Tab Sheet When Patient Admitted	Resulting Limits	Unit Default Alarm Level (Brady)	Resulting Alarm Level
Adult	Adult	50, 150	Message	Message
	0-2 years	90, 200	Message	Crisis
	3-10 years	60, 180	Message	Crisis
	11-13 years	50, 150	Message	Advisory
0-2 years	Adult	50, 150	Message	Advisory
	0-2 years	90, 200	Message	Message
	3-10 years	60, 180	Message	Crisis
	11-13 years	50, 150	Message	Advisory

Telemetry Unit Defaults Tab Sheet Setting	Age Chosen In The Admit Tab Sheet When Patient Admitted	Resulting Limits	Unit Default Alarm Level (Brady)	Resulting Alarm Level
3-10 years	Adult	50, 150	Message	Advisory
	0-2 years	90, 200	Message	Crisis
	3-10 years	60, 180	Message	Message
	11-13 years	50, 150	Message	Advisory
11-13 years	Adult	50, 150	Message	Advisory
	0-2 years	90, 200	Message	Crisis
	3-10 years	60, 180	Message	Crisis
	11-13 years	50, 150	Message	Message

Factory defaults

These factory defaults are in effect, depending upon the patient's age, unless they have been modified through *Telemetry Unit Defaults*.

- ECG *Display Lead* is II
- Multi-Lead analysis
- Heart rate alarm limits (high/low):
 - ♦ Adult—150/50
 - ◆ 0-2 years—200/90
 - ♦ 3–10 years—180/60
 - ◆ 11-13 years—150/50
 - ST measurement:
 - ◆ *Adult* J+ 60ms
 - ◆ 0-2 years— J+ 30ms
 - ◆ 3-10 years— J+ 40ms
 - 11-13 years— J+ 50ms
- PVC limit is 6
- 1X size
- Pace off
- *Arrhythmia On* (arrhythmia changes with age)
- ST off
- Graph leads II and V
- 25 millimeters per second speed
- Alarm Graph location at the CIC Pro center where patient was admitted
- TTX (manual) graph location at the CIC Pro center where patient was admitted
- Print window location at the CIC Pro center where patient was admitted

Telemetry alarm control defaults

This option sets the telemetry default alarm limits and alarm level settings. In user mode, all of the controls are view-only. You must be in Service mode to set the *Telemetry Alarm Control Defaults* at the CIC Pro center.

	Parameter I	Limits and	Alarm Lev	rels		Arrhythmia Al	arm Levels
		Low	High	Level			Level
HR	bpm	50	150	WARNING		ASYSTOLE	CRISIS
ST-I	mm	-2.0	2.0	WARADING		VFIB/VTAC	CRISIS
ST-II	mm	-2.0	2.0	WARNING		V TACH	CRISIS
ST-III	mm	-2.0	2.0	WARNING		VT > 2	CRISIS
ST-V	mm	-2.0	2.0	WARNING		V BRADY	CRISIS
ST-V2	mm	-2.0	2.0	WARNING		ACC VENT	ADV150RY
ST-V3	mm	(2.0	2.0	WARNING		PAUSE	ADVISORY
ST-V4	mm	-2.0	2.0	WARNING		TACHY	ADVISORY
ST-V5	mm	-2.0	2.0	WARNING		BRADY	ADVISIORY
ST-V6	mm	-2.0	2.0	WARNING		RONT	MESSAGE
ST-AVR	mm	-2.0	2.0	WARNING		COUNT	Monther
ST-AVL	mm	-2.0	2.0	WARNING:		System Ala	rm Levels
ST-AVE	mm	-2.0	2.0	WARNING			Level
NBP-S	mmHg	60	200	WARNING		CHANGE BATTERY	SYS WARNING
NBP-D	mmHg	20	120	WARALING		OFF NETWORK	SYS WARNING
NBP-M	mmHg	40	140	MINRAING		ARR SUSPEND	SVS WARNING
SPO2	**	90	102	WZRNIHAG.		LEADS FAIL	SYS WARNING
PO2-R	bpm	50	150	WARNING	-1	PROBE OFF	SYS WARNING

To view the telemetry unit default settings, click *CIC Setup* > *Telemetry Alarm Control Defaults*.

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Parameter Limits and Alarm Levels		Low	High	Level
HR	bpm	50	150	Warning
ST-I	mm	-2.0	2.0	Warning
ST-II	mm	-2.0	2.0	Warning
ST-III	mm	-2.0	2.0	Warning
ST-V	mm	-2.0	2.0	Warning
ST-V2	mm	-2.0	2.0	Warning
ST-V3	mm	-2.0	2.0	Warning
ST-V4	mm	-2.0	2.0	Warning
ST-V5	mm	-2.0	2.0	Warning
ST-V6	mm	-2.0	2.0	Warning
ST-aVR	mm	-2.0	2.0	Warning
ST-aVL	mm	-2.0	2.0	Warning
ST-aVF	mm	-2.0	2.0	Warning
NBP-S	mmHg	80	200	Warning
NBP-D	mmHg	20	120	Warning
NBP-M	mmHg	40	140	Warning
SPO2	%	90	105	Warning
SPO2-R	bpm	50	150	Warning

Parameter Limits and Alarm Levels		Low	High	Level
RR	breaths/min	5	30	Warning
RR-APNEA	seconds		30	Warning
PVC	#/min		6	Advisory

	Arrhythmia Alarm Levels	Levels
	ASYSTOLE ¹	Crisis
	VFIB/VTAC	Crisis
	V TACH	Crisis
	VT > 2	Crisis
	V BRADY	Crisis
	ACC VENT	Advisory
	PAUSE	Advisory
	ТАСНҮ	Advisory
	BRADY	Advisory
	R ON T	Message
	COUPLET	Message
	BIGEMINY	Message
	TRIGEMINY	Message
	PVC	Message
	IRREGULAR	Message
	ATRIAL FIB	Message
	¹ The default alarm level for Crisis level.	or Asystole and VFIB/VTACH cannot be moved from the

System Alarm Levels	Levels
CHANGE BATTERY	System Warning
OFF NETWORK	System Warning
ARR SUSPEND	System Warning
LEADS FAIL	System Warning
PROBE OFF	System Warning

Full disclosure defaults

This option sets the full disclosure settings. In user mode, only the full disclosure Report and Strip settings can be configured. You must be in the Service mode to set the other full disclosure settings at the CIC Pro center.

To view the full disclosure default settings, click *CIC Setup* > *Full Disclosure Defaults*.

Note Location	-	in all inte
• •		
		BedList
Line Time		
C 30aec		
🕫 Tmin		
Hale Location		
Offline Stora		
P 65.50		
	a Tane 15ec 20ec 11er 1er Male Location Colline Story	Continue Storage

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Option	Function	
Report		
Duration	Designate how much data is included in the report. The maximum report duration is 72 hours, depending upon licensing.	
	To set the report duration, place the cursor on the scroll bar below the Report Duration display field. Move the scroll bar to the left for shorter duration or to the right for longer duration.	
Hole Location	Provide space for binding printed reports. Choices are: <i>none</i> , <i>top</i> , <i>bottom</i> , <i>left</i> , and <i>right</i> .	
Include	Set print characteristics. You may set any or none of these options. Choices are: <i>Graybar</i> , <i>Arrhythmia Annotations</i> , and <i>Heart Rate</i> .	
Line Time	Designate how much data shows on an individual report line. Choices are: 15sec , 30sec , and 1min .	
Strip		

Option	Function
Duration	Designate how much data is included in the strip. The maximum strip duration is 60 minutes.
	To set the strip duration, place the cursor on the scroll bar below the Strip Duration display field. Move the scroll bar to the left for shorter duration or to the right for longer duration.
Hole Location	Provide space for binding printed reports. Choices are: <i>none</i> , <i>top</i> , <i>bottom</i> , <i>left</i> , and <i>right</i> .
Unit License Default: Full Disclosure License Type	NOTE You must be in the Service mode at the CIC Pro center to modify this setting.
	Display a list of the full disclosure license type. Choices are: <i>none</i> , <i>24 hours</i> , <i>48 hours</i> , and <i>72 hours</i> .
	NOTE
	If the default does not match the actual license, full disclosure does <i>not</i> work.
Offline Storage	Select a time period to store full disclosure data if contact with a monitor has been lost. Choices are: 30mins , 1 , 2 , 4 , 8 and 12 hours .
Ċ	WARNING POTENTIAL DATA LOSS — Do <i>not</i> allow a NO COMM (patient offline) event to exceed the time limit selected in the Offline Storage setting. The patient's full disclosure data is deleted if the time limit is exceeded.
	For more information, refer to the CIC Pro Clinical Information Center Bedrock Platform Service Manual.
Start Data Storage	NOTE
	You must be in the Service mode at the CIC Pro center to modify this setting.
	Designate how full disclosure is enabled for patients at the time of admission. Choices are: automatically for all beds , automatically if listed , and manually .
Bed List	NOTE
	You must be in the Service mode at the CIC Pro center to modify this setting.
	Lists beds for which full disclosure data is automatically stored.
Restore	Clear any changes you made to the full disclosure default settings and revert to the previous settings.

Current telemetry listings

NOTE

Refer to the CIC Pro Clinical Information Center Bedrock Platform Service Manual for important configuration information.

NOTE

Telemetry beds are distinguished from monitoring beds by an asterisk appended to the end of the bed number.

To view the Current Te	lemetry Listings,	, click CIC S	etup > Current	Telemetry
Listings.				

Display Format	Scre	en Calibration	Service Pas	sword	Full Disclosure Defaults
IC Defaults	Telemetry Unit Defa		Telemetry Alarm Cont	rol Defaults	Current Telemetry Listing
dmitted Telemetry Pati	ients				
Tower	Receiver	Unit Bed	Туре	Transmitter	
"MEIJENG"	11	"CIC T×1*" Software Revisio	TELE BED on: CDT diskette version	111 is 6A (407692-064)	
"MEIJENG"	2	"CICIBBC*" Software Revisio	TELE COMBO on: CDT diskette version	118 is 6A (407692-064)	
"MEIJENG"	3	"ICUIDAN2"" Software Revisio	TELE COMBO on: CDT diskette version	320 is 6A (407692-064)	
"MESISCHEARS"	8	"RACK1 SIMUL Software Revisio	" TELE BED on: CDT diskette version	726 is 68 X05 (407692-08	2)
"MEIJENG"	1	"CICIT×BED*" Software Revisio	TELE BED on: CDT diskette version	792 is 6A (407692-064)	
"MEGICOUEADO"	1	"DACKOCIAUU		000	_
eds and Transmitters-					
Telen	netry Beds		Hardwire Beds		Fransmitters
222×		BED05		123×	
3*		CARP		1234*	
BETH*		DAN2		290*	
BRIAN*		E01		304×	_
DAN*		GEO		320×	
DASH1*				344×	_
GAR10*				7601×	
Dence Extended and			Dislate to delete a colori	and Series	
riess chier to add a r	lew item or modify a	a selected item. Press	Dielere (O delete a seleci	ieu kem	

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Option	Function		
Admitted Telemetry Patients	Provide a view-only overview of the admitted telemetry patients.		
	NOTE		
	Each row contains information for one telemetry patient. The second line of an entry shows the current software level for the patient bed in question.		
	■ Tower : The telemetry receiver system for this patient		
	• <i>Receiver</i> . The receiver for this transmitter.		
	■ Unit/Bed: The unit and bed assigned to this patient.		
	Type : The type of patient; Tele Bed or Tele Combo .		
	Transmitter : The transmitter's identification number.		
Telemetry Beds	Add, modify or delete a telemetry bed name.		
Hardwire Beds	Add, modify or delete a hardwire bed name.		
Transmitters	Add, modify or delete a transmitter.		

Control settings (temporary)

Control settings allow you to make temporary adjustments to some of the system and clinical application settings of the CIC Pro center. Control settings are temporary, meaning they apply to a selected patient and are erased when the patient is discharged.

For detailed control setting information, including displayed waveform, *Alarm Control*, parameter control and print settings, refer to the CIC Pro Clinical Information Center Operator's Manual.To adjust the *Alarm Volume*, refer to Alarm volume on page 4-18.

Alarm volume

To adjust the *Alarm Volume* for a telemetry patient at the CIC Pro center, follow these steps:

1. From the multi-patient viewer, click *CIC Setup* > *CIC Defaults* to display the current alarm volume.

Name	Curren	Alarr	n Volume 0 %		Color Set
Unit	· Minim	ant 🕅	10.00		C Inviduori C Galan
Mirror Central Disp		-		ECG	·
Line:		es softent tree In	en Guerre	AFIT	
Lucia				FA	
Waveforms		Alarma	OFF Selection	CVP	-
ECG 1: CFrom EC	Source) Allow Ala	ms OFF On this C	C 670 67	RA	
Waveform 2	-	en essen a barev			
Waveform 3	2			SP	
Advention 1000				LIAC	
	PrinterA	Writer		UVC	
Laser: [0	1		Cancel Print John	RESP SP02	
Full Disclosure	íf.	i i	Cancel Print Job	C02	
CVersion 501572 Core	noht 2005 General Electr	c Concorry - All n	abts reserved.		

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- 2. Click the down arrow next to *Minimum* and select the desired *Alarm Volume*. The minimum *Alarm Volume* can be set between OFF and 100%.
- 3. Click the down arrow next to *Current* and select the desired *Alarm Volume* above the minimum volume setting. The current alarm level determines the actual alarm volume.
- 4. Click *Apply*.

5 Alarms



Alarm notification

WARNING

ALARM ACTIVATION—No alarms sound or display on the CIC Pro center until a monitored patient is admitted to the CIC Pro center. The CIC Pro center will *not* alarm if an unadmitted patient enters an alarm condition. You must admit the patient to activate the alarms, automatic alarm printing, and the *Events* directory.

WARNING

OUT-OF-UNIT ALARMS—No audible alarms sound on the CIC Pro center for any viewed out-of-unit patient beds. The CIC Pro center only displays on-screen alarm indicators for viewed out-ofunit patient beds.

The CIC Pro center notifies you of patient or system status alarm conditions using audible tones, on-screen indicators, or both audible tones and on-screen indicators.

The alarm tones used to identify alarm conditions are identified in Patient status alarms on page 5-3 and System status alarms on page 5-4.

The following picture shows examples of on-screen alarm indicators:



	On-screen alarm indicators						
1	ADU Alarm buttons						
	NOTE						
	Clicking the alarm button displays detailed real-time parameter data for the alarming patient in a single patient viewer.						
2	Parameter window						
3	Waveform area alarm message						

Alarm categories

The CIC Pro center categorizes alarms into patient status or system status alarms.

NOTE

The system will enunciate the system *Warning* and system *Advisory* fog horn for *Leads Fail*, as it takes priority over any active patient status *Warning*, *Advisory* and *Message* alarms.

NOTE

Crisis alarms are never superseded.

NOTE

When in *Combo* mode, alarm priority may be affected by the monitoring mode, i.e., *USER DEFINED* or *TELE DEFINED*. For more information, refer to Combo and Rover Combo monitoring on page 6-19.

Patient status alarms

Patient status alarms are the highest priority alarm. They are triggered by a patient condition which exceeds a parameter's alarm limits or by an arrhythmia condition.

There are four severity levels of patient status alarms:

- Crisis: Life-threatening events. Crisis alarms sound until silenced by the user.
- *Warning*: Serious but non-life-threatening events. *Warning* alarms sound until the condition is resolved.
- *Advisory*: Events that require monitoring, but are not serious or life threatening. *Advisory* alarms sound until the condition is resolved.
- **Message**: Additional information only.

The CIC Pro center's response to patient status alarms is as follows:

Indicator	Crisis	Warning	Advisory	Message
Alarm tone	Three beeps	Two beeps	One beep	No
On-screen message	Yes	Yes	Yes	Yes
Colored patient window border ^{1 2}	Red	Yellow	No	No
Automatic graph ³	Yes	Yes	No	No
Events	Yes	Yes	Yes	No

¹When using the multi-patient viewer, the patient window border briefly flashes on and off at the start of the alarm and then stays on until the alarm is silenced or the alarming condition ends.

²Only patient status *Crisis* and *Warning* alarms and system status *Warning* alarms activate the colored border. Patients selected for single patient view have a white border in the multi-patient viewer.

³For telemetry patients only, the factory default for this setting is *Always on*. To change this setting, see the *Telemetry Unit Defaults* in the CIC Pro Clinical Information Center Bedrock Hardware Platform Service Manual.

A graph prints automatically when a patient experiences a *Crisis* or *Warning* alarm. Arrhythmia alarm graphs run until the end of the alarm event or manually stopped by the user. The printer prints the 10 seconds of data that occurred immediately before the event, and prints for the duration of the event. The printer stops printing when the patient returns to a normal rhythm. If a printer is not available at the time of the alarm event, a 20-second graph is saved. This saved graph will print when a printer becomes available.

You can temporarily adjust patient status alarm levels and limits. See Adjusting alarm control settings on page 5-8.

System status alarms

System status alarms are triggered by network or equipment problems. They are of lesser priority than patient status alarms.

There are three severity levels of system status alarms:

- System Warning: Serious network or equipment problems.
- System Advisory: Network or equipment problems.
- System Message: Additional information only.

The CIC Pro center's response to system status alarms is as follows.

Indicator	System Warning	System Advisory	System Message
Alarm tone	Repeating foghorn	Single foghorn	No
On-screen message	Yes	Yes	Yes
Colored patient window border ^{1 2}	Yellow	No	No

¹When using the multi-patient viewer, the patient window border briefly flashes on and off at the start of the alarm and then stays on until the alarm is silenced or the alarming condition ends.

²Only patient status *Crisis* and *Warning* alarms and system status *Warning* alarms activate the colored border. Patients selected for single patient view have a white border in the multi-patient viewer.

Managing patient alarms

To support a patient's unique arrhythmia or parameter condition, you can temporarily adjust a patient's *Parameter Limits And Alarm Levels*. See Adjusting alarm control settings on page 5-8.

The bedside monitors automatically stores a 10-second strip for all *Advisory*, *Warning*, or *Crisis* arrhythmia events. The CIC Pro center can retrieve and display the 10-second strip stored at the bedside monitor.

When configured for it, your CIC Pro center automatically prints patient alarm graphs. See Printing patient alarm graphs on page 5-17.

Enable transmitter pause

The *Enable Transmitter Pause* check box, when checked, allows alarms to be paused by pressing both transmitter buttons simultaneously.

To enable the transmitter pause option for a telemetry patient admitted to the CIC Pro center, click in the *Enable Transmitter Pause* check box. A check mark appears in the check box.

To disable the transmitter pause option, click in the *Enable Transmitter Pause* checkbox. The check mark is removed from the check box and the option is disabled.

NOTE

If *Off* is selected for the *Transmitter Alarm Pause* option in the *Telemetry Unit Defaults* tab sheet, no check box appears on the tab.

To make the *Enable Transmitter Pause* option active (check box available), either *Enabled* or *Disabled* must be selected for the *Transmitter Alarm Pause* option in the *Telemetry Unit Defaults* tab sheet.

Pausing alarms at the transmitter

WARNING

Alarms do not sound and alarm graphs do not print during an *ALARM PAUSE* condition.

CAUTION

All alarms, except *Crisis* alarms, are ignored while the alarm pause is active.

NOTE

The *Enable Transmitter Pause* option for a telemetry patient admitted to the CIC Pro center must be enabled before the patient can initiate an alarm pause from the transmitter.

To pause the alarms for five minutes, press the **Verify Leads** and **Graph** buttons simultaneously. When the **Pause Alarm** combination is pushed, the following takes place:

- The top row of LEDs will flash twice, indicating the buttons were pushed.
- The Pause Alarm LED will flash at a 1 second rate until the pause alarm condition times out (5 minutes by default, but settable through the programming box).

• *ALARM PAUSE* displays in the patient's waveform window on the CIC Procenter screen.

After five minutes, the LED on the transmitter will no longer flash and alarms will be reactivated.

Reactivating alarms at the transmitter

To reactivate the alarms before the five minute time period has elapsed, press both transmitter buttons simultaneously again.

Alarm pause breakthrough

NOTE

For more information on the *Alarm Pause Breakthrough* feature in *Combo* mode, refer to Combo and Rover Combo monitoring on page 6-19.

NOTE

The *Alarm Pause Breakthrough* feature defaults to *Always On*. It can be set to *Always Off* in the *Telemetry Unit Defaults* tab sheet BEFORE admitting a telemetry patient if you do not wish to have *Crisis* level alarms break through alarm pauses.

This feature cannot be set on an individual patient basis. It is either on or off for all telemetry patients admitted to the CIC Pro center. A status message on each patient's *Alarm Control* tab sheet indicates whether it is enabled (on) or disabled (off).

The *Alarm Pause Breakthrough* feature allows any *Crisis* level alarm to break through (interrupt) an alarm pause and sound at the CIC Pro center.

In other words, when this feature is turned on in the *Telemetry Unit Defaults* tab sheet, *Crisis* level alarms will sound at the CIC Pro center, even if an alarm pause is in effect.

Alarm Pause State	Alarm Pause Breakthrough Feature Enabled
Alarms on	No Alarm Pause Breakthrough; all alarms are on.
Alarms off	No Alarm Pause Breakthrough; all alarms are off.
Alarm off reason (X-ray, shower, etc.)	Alarms are paused; <i>Crisis</i> level alarms will break through the alarm off reason if the patient is in antenna range.
Alarms paused from the transmitter	Alarms are paused; Crisis level alarms will break through the alarm pause.

The chart below illustrates the function of the *Alarm Pause Breakthrough* feature during the various alarm states.

After a *Crisis* level alarm has broken through an alarm pause, the telemetry system does *not* return to an alarm pause state. All alarms at any alarm level will sound at the CIC Pro center.

If you wish to continue pausing alarms after an *Alarm Pause Breakthrough* occurs, you must re-initiate the alarm pause:

- 1. To re-initiate an alarms off with reason condition, select the alarms off reason in the telemetry patient's *Alarm Control* tab sheet.
- 2. To re-initiate an alarm pause from the transmitter, press both transmitter buttons simultaneously twice.

NOTE

The transmitter buttons must be pressed once to end the alarm pause at the transmitter, then a second time to start a new alarm pause at the transmitter (see below).

The **Pause Alarm** LED on the transmitter continues to flash after an *Alarm Pause Breakthrough* occurs. This is because there is no communication from the CIC Pro center back to the transmitter to indicate that the alarm pause has ended.

After an *Alarm Pause Breakthrough* occurs, you can turn off the flashing **Pause Alarm** LED by pressing both transmitter buttons simultaneously.

Silencing alarms

Temporarily silencing alarms from the CIC Pro center

WARNING

Do *not* continuously try to silence audible alarms. You may inadvertently silence new patient alarms.

Once you are notified of an alarm condition, you can silence audible alarms from the CIC Pro center for one minute by clicking the *Silence Alarms* button located on the display screen or by pressing the **Silence Alarms** key located on the keyboard.

This sends a silence notification to the bedside monitor. For most GE monitors, this silence notification will silence the alarms for up to one minute. However, the bedside monitors must be configured to allow bedside alarms to be silenced from the CIC Pro center.

NOTE

The following conditions apply when you silence alarms at the CIC Pro center:

- The alarms remain silent for one minute unless a new patient alarm condition occurs.
 - ApexPro telemetry beds: If a patient alarm condition of any severity level occurs, the alarm silence condition is cancelled and the alarm will break through.
 - Monitors and CD Telemetry-LAN telemetry beds: If a patient alarm condition of equal or greater severity level occurs, the alarm silence condition is cancelled and the alarm will break through.
- The alarms for all patients are silenced simultaneously. You cannot silence patient alarms one at a time.
- The CIC Pro center displays a filled alarm silence icon when alarms are silenced at the CIC Pro center or at a monitor.

Alarm silence indicator

When active alarms are silenced at the CIC Pro center or at a monitor, the CIC Pro center displays an alarm silence icon in the ECG parameter window.

This icon remains displayed for the duration of the alarm silence condition or until a new alarm condition occurs.

Adjusting alarm control settings

When viewing a single, in-unit patient from the CIC Pro center, you may temporarily adjust the monitor *Alarm Control* settings.

WARNING

ALARM CONTROL SETTINGS—If you adjust parameter limits or alarm levels at the CIC Pro center, these setting changes are also implemented by the bedside monitor. You must notify the bedside caregiver that you changed the parameter limit or alarm levels of that bedside monitor.

NOTE

The following guidelines apply to changing *Alarm Control* settings at the CIC Pro center:

- The changes you make to the settings apply to the selected patient only and are adopted by the patient's monitor.
- Some control settings for non-GE acquisition devices that are interfaced via the Unity Network Interface Device or the OCTANET interface device are not adjustable.
- It may be necessary to use the scroll bar at the right side of the window to view the appropriate alarm.
- The control settings that are blue in color indicate this setting has already been adjusted from the default value.
- The patient or the acquisition device must be located in-unit.
- Any out-of-unit patient alarm settings can be viewed, but not changed.

Monitor alarm control settings

Complete the following procedures to temporarily adjust the following monitor *Alarm Control* settings for a selected patient:

- Low/high parameter alarm limits and alarm levels.
- Arrhythmia Alarm Levels.

NOTE

All changes are temporary and return to the default settings when the patient is discharged.

To permanently change the *Alarm Control* settings for telemetry patients, see the *Telemetry Alarm Control Defaults* section of the CIC Pro Clinical Information Center Bedrock Hardware Platform Service Manual.

Displaying the alarm control window

- 1. From the multi-patient viewer, click on the patient you want to view. The single patient viewer displays.
- 2. From the single patient viewer, click *Monitor Setup* > *Alarm Control*. The *Alarm Control* window displays.

Farm							
	meter Linds a	end Alarma I	Levels .		Arrightenia Ar	area Lawets	
		0.0	Filighs	Level		Levet	- 0h
81-1	ww	2.8	2.0	WAANING	ASYSTURE	CE1525	C diam Passe - Smart Alarm
87-11 1	1899 -3	0.1	2.0	WARNERS	WER/VTAC	CAUE/5	fahor.
67-111	am -1	0.5	2.0	with hitse	V TACH	CRISIS	C OF
RE-VI I	1981 ~3	1.0	2.0	WARNING	VT>2	CRIMIN	1.
81-V2	ww. <	0.4	2.0	WWWWWW	V BRADY	CRISIS	
ET AVE	1986 - V	1.0	2.0	In All National	ACC VENT	ADV/IDOR/F	
AT AVE.	wii: -4	1.01	2.0	wide Nited.	PAUME	ADVISORY	
ET-AVE I	atta i	2.01	2.0	www.hang	TACHO	ADV/(00F)1	
NOP-0 81	nat kaj	12	1.211	wohiteheta	BRADY	AD-150RT	and the second s
NEP-D III	utig :	30	120	WARNING	R.0% T	HEDGAGE	C Amable Transmitter Paule
N80-14 m	owing .	20	329	warning -	111900	NESSAGE	- Alarm Paulo Breakfbrough ChABLEE
1401 B	pres 1	10	180	ADSIBIORY	BIGENBAY	METICADE	And the bolies in the loss
PVC #	Senders ()	11111		ADVISORY	TRUDEMENT	HESSAGE	Street and a street of the str
					PMC	HEDGAGE	

You may change any of the undimmed setting options. When an option appears dimmed, you cannot change it.

Adjusting the parameter limit values

WARNING

ALARM CONTROL SETTINGS—If you adjust parameter limits or alarm levels at the CIC Pro center, these setting changes are also implemented by the bedside monitor. You must notify the bedside caregiver that you changed the parameter limit or alarm levels of that bedside monitor.

- 1. From the *Alarm Control* window, click on the alarm limit *Low* or *High* field.
- 2. Click the up or down arrows to increase or decrease the alarm limit value. You may also type the values directly into the highlighted data field.
- 3. Repeat the previous steps to adjust additional alarm limit values.
- 4. After making your selections, complete one of the following tasks:
 - Choose a different control setting to adjust.
 - Click the close button) on the top right side of the window to close the window.

Adjusting the alarm levels

WARNING

ALARM CONTROL SETTINGS—If you adjust parameter limits or alarm levels at the CIC Pro center, these setting changes are also implemented by the bedside monitor. You must notify the bedside caregiver that you changed the parameter limit or alarm levels of that bedside monitor.

- 1. From the Alarm Control window, click on the alarm Level field.
- 2. Click the down arrow to display a list of alarm levels.
- 3. Select the desired alarm level.
- 4. Repeat step 1 to step 3 to adjust additional alarm level settings.
- 5. After making your selections, complete one of the following tasks:
 - Choose a different control setting to adjust.
 - Click the (close button) on the top right side of the window to close the window.

Adjusting telemetry Alarms On/Off control settings

WARNING

Alarms do not sound, alarm histories are not stored, and alarm graphs do not print during an alarms off with reason condition.

NOTE

The patient must be in antenna range for the alarm pause state to cease. After the patient has returned to antenna range and/or alarms have been turned back on, verify that the patient's waveforms are displayed at the CIC Pro center or bedside monitor

NOTE

Refer to Alarm pause breakthrough on page 5-6 for important alarm pause information.

The telemetry *Alarm Pause - Smart Alarms* feature reduces false patient alarms and works as follows:

- When a patient is re-connected to the telemetry device and continuous ECG data is recorded, the alarm pause condition automatically clears.
- Selecting any reason establishes an alarm pause state for 5 minutes in the presence of a valid waveform. After 5 minutes, alarms will reactivate if the patient is within range of the antenna system for 15 seconds or longer and continuous ECG data is detected. If the patient remains out of antenna range, the alarm pause state will continue until the patient re-enters antenna range for 15 seconds or longer.
- When a patient is re-connected to the telemetry device and continuous ECG data is recorded, the *Alarm Pause* condition automatically clears.
- The alarms off reason displays in the event trend for *Graphic Trends*.
- If the patient is in *LEADS FAIL* or *NO TELEM* and an alarms off reason is selected, the reason is displayed in the waveform window.

Complete the following procedure to adjust the *Alarms On/Off* control settings:

- 1. To temporarily pause this telemetry patient's alarm to complete a procedure, click *Alarm Pause Smart Alarms*. Then, complete the following steps:
 - a. Click the down arrow to display a list of reasons for pausing the alarm.
 - b. Select the desired reason. This text is displayed in addition to the *ALARMS OFF* message in the patient's window at the CIC Pro center.

Alarms Off Reason	Text Displayed At CIC Pro center	Text Printed On Graph
On	(no text)	(no text)
Off ¹	ALARMS OFF	OFF
X-ray	XRAY	X-RAY
Shower	SHOWER	SHOWER
Surgery	SURGERY	SURGERY
Physical therapy	Р.Т.	PHYSICAL THERAPY

Alarms Off Reason	Text Displayed At CIC Pro center	Text Printed On Graph
Cardiac rehab	CAR REHAB	CARDIAC REHAB
GI Lab	GI LAB	GI LAB
Occupational therapy	О.Т.	OCCUPATIONAL THERAPY
Off unit	OFF UNIT	OFF UNT
Cath Lab	CATH LAB	CARDIAC CATH LAB

¹OFF appears dimmed and is not selectable when the following service-level default is set: CIC Setup > CIC Defaults > Allow Alarms OFF on this CIC > No. To be able to turn off alarms for a telemetry patient, you must change the Allow Alarms OFF on this CIC service-level default to Yes. For more information, refer to the CIC Pro Clinical Information Center Bedrock Hardware Platform Service Manual.

2. To turn off alarms for this telemetry patient, click OFF.

WARNING

The telemetry alarms remain off until you manually select ON again.

Telemetry bed alarm control defaults

You cannot adjust the *Telemetry Alarm Control Defaults*. These settings are service-level defaults and are password protected.

To view the settings, from the multi-patient viewer, click *CIC Setup* > *Telemetry Alarm Control Defaults*.

To permanently change the *Telemetry Alarm Control Defaults*, see the CIC Pro Clinical Information Center Bedrock Hardware Platform Service Manual.

Alarm unit default settings

Telemetry alarm control defaults

You can set *Telemetry Unit Defaults* for *Parameter Limits And Alarm Levels*, as well as for *Arrhythmia Alarm Levels*. These defaults are in effect for all telemetry patients admitted to your unit, unless they are modified in an individual patient's *Alarm Control* tab sheet.

To set *Telemetry Alarm Control Defaults*, follow the steps below:

- 1. Click *CIC Setup*. A set of tabs displays.
- 2. Click on the *Service Password* tab to bring it to the front.

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etup	Y.	x	Σ.	
CIC Defaults	Telemetry Unit Defaults	Telemetry Alarm	Control Defaults	Current Telemetry Listings
Display Format	Screen Lailbration	Service nassword	Browser Uption	Full Disclosure Defaults
	Enter password to Pas	set SERVICE mode:		
	Current Perr	nission: User		

3. Use the keyboard to enter the service password, then click the *Apply* button. The *Current Permission* entry changes from *User* to *Service*.

CAUTION

The service mode is intended for use only by qualified personnel with training and experience in its use. The consequences of misuse include loss of patient data, corruption of the CIC Pro center operating system software, or disruption of the entire Unity network.

4. Click on the *Telemetry Alarm Control Defaults* tab to bring it to the front.

Display For CIC Defaults	nat Ti	Screen elemetry Unit C	n Calibiation letaults	Televelry Ala	vice Pass em Conto	oword Fu olDefaults Cu	Disclosure Defaults next Telemetry Listings	
	Parameter	Limits and	Alarm Lev	els	-	Arrhythmia Al	arm Levels	į
		Low	High	Level			Level	
HR	bpm	50	150	WARNING		ASYSTOLE	CRISES:	
ST-I	mm	-2,0	2.0	WARNING		VFIB/VTAC	CHISIS	
ST-II	mm	2.9	2.0	WARNING		V TACH	CRISTS	
ST-III	mm	-2.0	2.0	WARNING		VT > 2	CRISIS	
ST-V	mm	-2,0	2.0	WARNING		V BRADY	CRISES	
ST-V2	mm	-2.0	2.0	WARRANG		ACC VENT	ADVISORY	
ST-V3	mm	-2.0	2.0	WARMING		PAUSE	ADVISORY	
ST-V4	mm	-2.0	2.0	WARNING		TACHY	ADVISORY	
ST-V5	mm	-2.0	2.0	WARNING		BRADY	ADVISORY	
ST-V6	mm	+2.0	2.0	WARNING		System Ala	rm Levels	Ĩ
ST-AVR	mm	-2.0	2.0	WARNING			Level	
ST-AVL	mm	-9.0	2.0	WARNENG	Щ	CHANGE BATTERY	SVS WARNING	
ST-AVF	8809	-2.0	2.0	WARNING	13	OFF NETWORK	SYS WARNING	
NBP-S	mmHg	00	200	WARNING	18	ARR SUSPEND	SYS WARNING	
NBP-D	mmHg	20	120	WARNING		LEADS FAIL	SYS WARNING	
NBP-M	mmHg	40	140	WARNING	-	PROBE OFF	SYS WARNING	
Unit Defaults are	for ApesPio Syst	tens only. All	other systems in	I use the following d	iefaults L	ow 20. High 20		

Parameter limits

1. To change the unit defaults for *Parameter Limits and Alarm Levels*, use the mouse to click in the *Low* or *High* field for the parameter you wish to edit. The field is framed by a rectangle, and up and down arrow buttons appear in the field.

Parameter Limits and Alarm Levels				
		Low	High	Level
HR	bpm	50	150 🔺	WARNING

- 329A
- 2. To increase or decrease the limit by 5, click on the up or down arrow button.

To increase or decrease the limit in increments other than 5, use the keyboard to enter a new limit value.

3. Once you have set the desired limit, click on the *Apply* button for the changes to take effect.

NOTE

If you make only one change, you do not need to click on the *Apply* button. The change will take effect automatically, and the *Apply* button will appear dimmed.

4. If you are finished making changes to the *Telemetry Alarm Control Defaults* tab sheet, click the *OK* button.

Parameter alarm levels

To make a change in the telemetry unit default alarm level for a parameter, first access the *Telemetry Alarm Control Defaults* tab as described in the *Telemetry Alarm Control Defaults* section in this chapter. Then follow the procedure below.

- 1. In *Telemetry Alarm Control Defaults* tab, use the mouse to click in the *Level* field of the parameter for which the alarm level is to be changed. A down arrow button appears in the field.
- 2. Click on the down arrow button. A popup list of alarm level selections appears.

Parameter Limits and Alarm Levels				
		Low	High	Level
HR	bpm	30	195	WARNING 🛃
PVC	#/min		10	CRISIS
ST-I	mm	-2.2	1.8	ADVISORY
OT 11		0.1	1.0	MESSAGE

- 3. Click on the desired alarm level to select it.
- 4. Once you have set the desired level, click the *Apply* button for the changes to take effect.
- 5. If you are finished making changes to the *Telemetry Alarm Control Defaults* tab sheet, click the *OK* button.

Arrhythmia alarm levels

To make a change in the telemetry unit default alarm level for arrhythmia alarms, first access the *Telemetry Alarm Control Defaults* tab as described in the *Telemetry Alarm Control Defaults* section in this chapter. Then follow the procedure below.

1. In the *Telemetry Alarm Control Defaults* tab, the *Arrhythmia Alarm Levels* for which unit defaults can be set appears on the right side of the window:

Arrhythmia Alarm Levels		-
	Level	
ASYSTOLE	CRISES	11
VFIB/VTAC	CRISIS	-11
V TACH	CRISIS	
VT > 2	CRISTS	12
V BRADY	CRISIS	18
ACC VENT	ADVISORY	
PAUSE	ADVISORY	B
TACHY	ADVISORY	
BRADY	ADVISORY	-

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2. Click in the *Level* field of the arrhythmia alarm you wish to modify. A down arrow button appears in the field.

NOTE

The *Arrhythmia Alarm Levels* for *ASYSTOLE* and *VFIB/VTAC* cannot be changed. Therefore, the text in the *Level* field for these alarms always appears dimmed.

- 3. Click on the down arrow button. A popup list of alarm level selections appears.
- 4. Click on your choice to select it.
- 5. Once you have set the desired level, click the *Apply* button for the changes to take effect.

If you are finished making changes to the *Telemetry Alarm Control Defaults* tab sheet, click the *OK* button.

System alarm levels

WARNING

ADJUSTING SYSTEM ALARM LEVELS — The *Leads Fail* alarm indicates that one or more electrodes are not connected to the patient and, as a result, there is loss of all waveforms and arrhythmia analysis. The *ARR SUSPEND* alarm indicates that arrhythmia conditions are not being detected and therefore alarms associated with arrhythmias will not occur. The *Leads Fail* and *ARR SUSPEND* alarms should be adjusted to a lower priority level only by experienced qualified personnel and with great caution. Adjusting these alarms to a lower priority level may result in reduced awareness of conditions that indicate the loss of patient monitoring.

NOTE

Some alarm conditions may have a higher priority level at the bedside monitor. In *Combo* mode, the alarm levels come from the telemetry settings. For example, *LEADS FAIL* can be set to *Crisis* at a bedside monitor, but the telemetry setting is a system *Warning*.

To make a change in the telemetry unit default alarm level for system alarms, first access the *Telemetry Alarm Control Defaults* tab as described in the *Telemetry Alarm Control Defaults* section in this chapter. Then follow the procedure below.

1. In the *Telemetry Alarm Control Defaults* tab, the *System Alarm Levels* for which unit defaults can be set appears on the right side of the window:

System Alarm Levels		
Level		
CHANGE BATTERY	SYS WARNING	
OFF NETWORK	SYS WARNING	
ARR SUSPEND	SYS WARRING	
LEADS FAIL	SYS WARNING	
PROBE OFF	SYS WARNING	

430A

- 2. Click in the *Level* field of the system alarm you wish to modify. A down arrow button appears in the field.
- 3. Click on the down arrow button. A popup list of alarm level selections appears.
- 4. Click on your choice to select it.

5. Once you have set the desired level, click the *Apply* button for the changes to take effect.

If you are finished making changes to the *Telemetry Alarm Control Defaults* tab sheet, click the *OK* button.

Recalling unit defaults

To recall the preset telemetry patient unit defaults for all options in the *Alarm Control* tab, simply click on the *Recall Unit Defaults* button on the bottom right side of the *Alarm Control* tab sheet. All data on the tab sheet will clear, and after a moment the preset unit defaults will appear.

In addition, clicking on the *Recall Unit Defaults* button also restores the default graph locations and settings on the patient's ECG tab sheet.

Alarm help

For additional information about alarms, click on the *Alarm Help* button at the bottom right side of the *Alarm Control* tab sheet. An *Alarm Help* window displays.

arm Help			
Patient Status Alarms Four categories of alarms provide patient status info generates a graph, and stores alarm histories. Warn	rmation. They are Crisis (most criticing has 2 beeps, generates a graph,	al), Warning, Advisory, and Message (le and stores alarm histories. Advisory has	east critical) respectively. Crisis has 3 beeps, s one beep, and stores alarm histories.
Crisis Alarm	Warning Alarm	Advisory Alarm	Message Alarm
	Crisis sounds continuously u	ntil SILENCE ALARM is pressed.	
System Status Alorns Two categories of alarms provide system status info Warning sounds c	rmation. They are Warning (most or Warning Alarm ontinuosiy until SILENCE ALARM is p	itical) and Advisory (least critical) resp Advisory Alarm ressed or the condition clears. Advisory	ectively.
	Clos	: ow	
			3

You can click on the buttons in this window to hear how each type of alarm sounds. When you are finished browsing the window, click on the *Close Window* button to close the window and return to the single patient viewer.

Printing patient alarm graphs

An automatic alarm graph prints the 10 seconds of data that occurred before the alarm event, then continues to print for the duration of the event. When the printer is not available, the bedside monitor stores the event data until the printer becomes available.

Configure the automatic printing of alarm graphs

The automatic printing of alarm graphs for telemetry beds must be enabled in the Service mode. For more information, refer to Telemetry alarm control defaults on page 5-12.

Printing alarm settings

A telemetry patient's *Alarm Control* tab sheet can be printed, showing all current alarm settings and limits. Click on the *Print* button in the main menu to start a printout of the *Alarm Control* tab sheet.

The *Alarm Control* tab sheet prints at the Print Window location. For more information about setting the Print Window location, refer to Chapter 9 in this manual.

NOTE

The *Alarm Control* tab sheet must be the front tab of the single patient viewer in order to print it. Click on the *Alarm Control* tab to bring it to the front if necessary.

Stop printing an alarm graph

You can stop the printing of an alarm graph from any in-unit CIC Pro center displaying the alarming patient bed.

Stop printing to a laser printer

Complete the following procedure to stop printing all print jobs sent to the laser printer:

- From the multi-patient viewer, click *CIC Setup* > *CIC Defaults*. The *CIC Defaults* window displays.
- 2. Under *Printer/Writer*, click *Cancel Print Jobs* for the printer you want to stop printing to.
- 3. After making your selection, complete one of the following tasks from the *CIC Defaults* window:
 - Click *OK* to apply your changes and close the *CIC Defaults* window.
 - Click *Cancel* to cancel your changes and close the *CIC Defaults* window.
 - Click *Apply* to apply your changes without closing the *CIC Defaults* window.

Stop printing to a local digital writer

Complete the following procedure to stop printing the current print job sent to a local digital writer:

- 1. Locate the digital writer.
- 2. Press the (Graph Stop) button located on the front of the digital writer to stop the print job.

6 Managing patients



Introduction

Prior to admitting a telemetry patient to the CIC Pro center, several steps need to be performed:

- 1. Transmitter setup on page 3-2.
- 2. Skin preparation on page 6-2.
- 3. Electrode placement on page 6-2.

You can manage in-unit patients from the CIC Pro center or from a networked monitor. When managing in-unit patients from the CIC Pro center, you can complete the following tasks:

- Admit patients.
- Change patient demographic information.
- Adjust parameter settings.
- View stored data.
- Move patients to different beds.
- Discharge patients.

Skin preparation

The quality of ECG information displayed on the monitor is a direct result of the quality of the electrical signal received at the electrode. Proper skin preparation is necessary for good signal quality at the electrode.

Choose flat, non-muscular areas to place electrodes, then follow the established prep protocol for your unit. Below is a suggested guideline for skin preparation:

- 1. Shave or clip hair from skin at chosen sites.
- 2. Thoroughly cleanse the site with alcohol or a mild soap and water solution. Be sure to remove all oily residue, dead skin cells, and abrasives.
- 3. Dry the skin completely before applying the electrodes.

Regardless of patient age, all electrodes should be replaced on a regular basis, AT LEAST every 48 hours, to maintain quality signals during long-term monitoring. If they are not, increased noise can occur. Over the course of 48 hours, the electrode gel will start to dry out and the adhesive will age. After a long period of time, the patient's skin may also be irritated by the gel or adhesive, causing discomfort.

Electrode placement

WARNING

CONTAMINATED LEADWIRES— Contaminated leadwires may cause infection. Always follow the skin preparation guidelines and leadwire cleaning instructions provided in this manual.

Leadwire (Software Label)	AHA Color	AHA Label	IEC Color	IEC Label
RA (right arm)	white	RA	red	R
LA (left arm)	black	LA	yellow	L
RL (right leg)	green	RL	black	Ν
LL (left leg)	red	LL	green	F
V1 (precordial)	brown	V1	white	C1
V2 (precordial)	yellow	V2	yellow	C2
V3 (precordial)	green	V3	green	C3
V4 (precordial)	blue	V4	brown	C4
V5 (precordial)	orange	V5	black	C5
V6 (precordial)	purple	V6	purple	C6

The following chart shows the label used to identify each leadwire. Included also is its associated color code per AHA (American Heart Association) and IEC (International Electrotechnical Commission) standards.

6-leadwire electrode placement

The following is a suggested configuration for a 6-leadwire electrode placement for all patients, including pacemaker and implantable cardiac defibrillator (ICD) patients:



6-leadwire AHA Electrode Placement

6-leadwire IEC Electrode Placement

100B, 101B

Right arm and left arm electrodes should be placed just below the right and left clavicle.

Right leg and left leg electrodes should be placed on a non-muscular surface on the lower edge of the rib cage.

NOTE

When using a 6-leadwire set, the V leads must be labelled correctly. Choices for *Va*: V1 to V6. Choices for *Vb*: V2 toV6. For more information, refer to User-level defaults (persistent) on page 4-7.

NOTE

The VI lead is recommended for arrhythmia detection, and the V5 lead is recommended for ST depression monitoring.¹

NOTE

For telemetry monitoring, any two precordial electrodes may be placed according to the clinician or physician's preference.

5-leadwire electrode placement

The following is a suggested configuration for a 5-leadwire electrode placement:



5-leadwire Electrode AHA Placement

5-leadwire Electrode IEC Placement

633B. 634B

Right arm and left arm electrodes should be placed just below the right and left clavicle.

Right leg and left leg electrodes should be placed on a non-muscular surface on the lower edge of the rib cage.

The precordial electrode should be placed according to the clinician or physician's preference.

3-leadwire electrode placement

WARNING

Do not monitor patients with a 3-leadwire set when reliable pacer detection is required. Pacer pulse detection can be erratic when only a single vector is monitored. Always use a 5- or 6-leadwire set when reliable pacer detection is required.

When a 5-leadwire electrode configuration is not desirable, a 3-leadwire set can be used. The following is a suggested configuration for a 3-leadwire electrode placement:

¹Barbara J. Drew, RN, PhD, FAAN (2000). Value of Monitoring a Second Precordial Lead for Patients in a Telemetry Unit, GE Medical Systems (order document number M04243ME0).



Right arm and left arm electrodes should be placed just below the right and left clavicle.

Left leg electrode should be placed on a non-muscular surface on the lower edge of the rib cage.

When using the standard 3-leadwire configuration, the following operating conditions occur:

- Lead Analysis automatically switches to Single-Lead analysis. If an attempt is made to change to Multi-Lead analysis, a message will appear briefly on the monitor, indicating that Multi-Lead analysis is not possible, and no change will occur.
- The choices for displayed leads are limited to I, II, and III. Any options usually allowing more than one ECG lead selection are disallowed.
- Respiration can be monitored from either lead I or II. It is not dependent on the displayed lead. Respiration is not available for telemetry patients. For more information, refer to SpO2 control settings on page 7-24.

Electrode placement for pediatric patients

Typically, pediatric patients are large enough for a 5- or 6-leadwire electrode configuration. This is the preferred monitoring setup for receiving the benefits of *Multi-Lead* analysis. However, if the patient is too small for five or six electrodes, the 3-leadwire electrode configuration can be used. The right arm and left arm electrodes are positioned on the right and left sides of the chest. The right leg electrode can be placed on either the right or left side of the abdomen. Refer to 3-leadwire electrode placement on page 6-4.

Electrode placement for neonate patients

Because neonatal patients are small, there is usually only enough room for a 3leadwire electrode configuration. A 3-leadwire neonatal ECG cable is available, and Multi-Link DIN adapter is available for the 5-leadwire Multi-Link cable. The right arm and left arm or right arm and left leg electrodes are positioned on the right and left sides of the chest. The third electrode (right leg) can be placed on either the right or left side of the abdomen.



Verify status

After the transmitter leadwires have been properly attached to the patient's electrodes, verify lead quality, electrode status and transmitter function.

- For more information, refer to Maintaining quality ECG signal on page 6-6.
- For more information, refer to Transmitters on page 2-2.

Maintaining quality ECG signal

Electrodes are disposable and applied only once. Attempts to replace a loose electrode guarantees excessive motion artifact and results in false alarms. Regardless of patient type, electrodes should be replaced at least every 48 hours to maintain quality signals during long-term monitoring. Over the course of 48 hours, the electrode gel will start to dry out and the adhesive will age. This may irritate the patient's skin.

The transmitter must be carried securely on the patient. Stabilize the electrode and leadwire with a leadwire stress loop near the electrode. Tape the stress loop to the patient. A secured stress loop prevents the leadwire rotation about the electrode snap, leadwire tugging at the electrode and ECG artifact.



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If the transmitter is allowed to dangle or jostle as the patient moves, then the weight of the device will tug on the electrodes, causing degradation of the signal. Even if the electrodes are in good contact, excessive tugging on the electrodes will change the physical structure of the gel, thereby generating motion artifact signals. Transmitters can be carried securely is inserted into pouches or placed into a patient's gown pocket.

Special considerations for 6-leadwire monitoring

V FAIL message

CAUTION

The CIC Pro center does not detect 6-leadwire monitoring until a signal from the sixth lead is received at the CIC Pro center. Therefore, if the sixth lead on the transmitter has failed before the telemetry patient is admitted to the CIC Pro center, the CIC Pro center will *not* generate a *V FAIL* message for the sixth lead.

At the patient's transmitter, verify that the sixth lead on the transmitter is good. Press the **Verify Leads** button on the transmitter and ensure that all the good lead LEDs illuminate.

Relearn

Admitting

CIC Pro center assumes that the telemetry patient is being monitored for six leads and that the sixth lead has failed. In situations where the admitted telemetry patient has been switched from 6- to 5-

monitoring while admitted to the CIC Pro center, a V FAIL message will appear. The

If a telemetry patient is switched from 6-leadwire monitoring to 5-leadwire

leadwire monitoring, the associated *V FAIL* message can be cleared by clicking on the *Relearn* button in the telemetry patient's ECG tab sheet. For more information, refer to ECG on page 7-11.

Prior to admitting a telemetry patient to the CIC Pro center, several steps need to be performed:

- 1. Transmitter setup on page 3-2.
 - Battery installation on page 3-3.
 - Leadwire installation on page 3-4.
 - Electrode attachment on page 3-5.
 - Verify transmitter/leadwires status on page 3-6.
- 2. Skin preparation on page 6-2.
- 3. Electrode placement on page 6-2.

Terminology

Term	Definition
Locked and unlocked beds	The CIC Pro center can be configured with the bed names in either locked or unlocked mode. When locked, the bed names are permanently assigned to specific windows.
	For information about locked and unlocked beds, refer to the CIC Pro Clinical Information Center Bedrock Hardware Platform Service Manual.
	NOTE
	It is possible to admit a patient to a window with a bed name that is locked to NONE . To avoid duplication of patient waveforms, a window locked to NONE should not be used to admit a patient.
Telemetry monitoring	Telemetry monitoring occurs when patient vital signs data is transmitted by a transmitter to a telemetry receiver system over an established antenna system and viewed at a CIC Pro center. The CIC Pro center identifies a telemetry bed by placing an asterisk next to the bed name (e.g., IMC BED4*). ECG data is processed by the telemetry receiver system.
TTX ID number	Each transmitter has a transmitter TTX ID number that corresponds to a frequency and service type. The TTX ID number is found in parenthesis on the back of the transmitter.
	When the TTX ID number is entered for a patient at the CIC Pro center, the CIC Pro center recognizes the transmitter type and translates the information into an alpha-numeric number. The alpha-numeric number of the transmitter is displayed under the ECG parameter window.
	NOTE
	The TTX ID number is a five digit number.

Term	Definition
Bedside monitoring	
Bedside monitoring (hard-wired)	WARNING INCORRECT ALGORITHMS, ARRHYTHMIA PROCESSING AND CALCULATIONS BASED ON PATIENT AGE — After manually updating or automatically retrieving patient demographic information from a network database, always confirm that the entered patient's date of birth matches the patient's actual date of birth. Otherwise the appropriate age-related algorithms, arrhythmia detection, and calculations will not be applied. A bedside monitor is a stationary monitor (user-configured or factory-configured). These monitors are connected directly to the patient via an ECG cable. They are set up with a unit
	to the patient via an ECG cable. They are set up with a unit name as well as a bed name (e.g., IMC BED4). For a user- configured monitor, ECG data is processed by an acquisition module. For a factory-configured monitor, ECG data is processed within the monitor itself. For more information, refer to the CIC Pro Clinical Information Center Operator's Manual.
Combo monitoring	This application provides the option to acquire ECG from either the monitor or from a telemetry receiver system. This ECG data acquisition capability enhances basic telemetry monitoring by providing additional access to all of the available parameters from the monitor. A Unity Network connection is required.

Factors guiding the admit process

WARNING

ALARM ACTIVATION—No alarms sound on the CIC Pro center until a patient is admitted to the monitor or CIC Pro center. The CIC Pro center or monitor will *not* alarm if an unadmitted patient enters an alarm condition. You must admit the patient to activate alarms, alarm graphs, and the *Events* directory.

You can admit a patient from the CIC Pro center or from a networked monitor. You only have to admit a patient once.

The steps you must complete to admit a patient at the CIC Pro center may vary resulting from the following factors:

- The source of the ECG data.
- The source of the patient demographic information.
- The mobility level of the monitor. Does the monitor move (rove) from room-to-room?
- The permanent assignment (locking) of beds in the multi-patient viewer.

The source of the ECG data

You can admit patients to the CIC Pro center when the source of their ECG data comes from either a monitor or a transmitter.

The source of the ECG data determines the monitoring mode the CIC Pro center uses. The monitoring mode is configured during installation.

The CIC Pro center supports one of the following monitoring modes:

Monitoring Modes			
Mode	Description		
Standard	The monitor and patient always stay in one room.The patient is not connected to a transmitter.		
Rover	The monitor moves (roves) from room to room.The patient is not connected to a transmitter.		
Combo	 The monitor (or transmitter) and patient always stay in one room. The patient is connected to either a stationary monitor or to a transmitter. 		
Rover Combo	 The monitor (or transmitter) moves (roves) from room to room. The patient is connected to either a stationary monitor or to a transmitter. 		

The source of the patient demographic information

Depending on the configuration of your CIC Pro center, you may use one of the following methods to enter patient demographic information:

- Enter search criteria (e.g., patient name) to retrieve matching patient demographic information from a networked database.
- Manually type patient demographic information into data entry fields and choose demographic information from a list.

The monitor moves (roves) from room to room

When the monitor moves (roves) from room to room and is not a transmitter, always admit the patient at the monitor.

NOTE

Before you admit a patient at a monitor that moves (roves), you must complete the following procedure (in the order it is presented) to ensure the correct bed number is identified at the CIC Pro center:

- 1. Turn off the monitor when you are storing it.
- 2. Keep the monitor turned off when you bring it into the patient room.
- 3. Verify the monitor is on the network.

- 4. Connect the monitor to an appropriate power outlet.
- 5. Turn on the monitor.
- 6. Wait 30 seconds, then verify the monitor displays the correct *Unit Name* and *Bed Name*. If the *Unit Name* and *Bed Name* do not appear, refer to To manually enter the patient demographic information on page 6-14.
- 7. Admit the patient to the monitor following the monitor's operator instructions.

The permanent (locked) beds in the multi-patient viewer

During the installation of the CIC Pro center, qualified personnel may configure the CIC Pro center to permanently display bed names in specific multi-patient viewer locations (windows). These beds are locked into position and are always displayed whether a patient is admitted to them or not. To change the display of locked beds, contact your biomedical engineering department.

Admitting a patient

This section covers the following tasks:

- Look for an empty patient window displaying an *Admit* button.
- Enter the patient demographics.
- Enter the bed number.
- Enter the source of the ECG data.
- Admit the patient.

NOTE

When the monitor moves from room to room and is not a transmitter, always admit the patient at the monitor. See The monitor moves (roves) from room to room on page 6-10.

Look for an empty patient window displaying an Admit button

1. From the multi-patient viewer, look for an empty patient window displaying an *Admit* button.



- a. When you see an empty patient window displaying an *Admit* button, go to step 2.
- b. If you do not see an empty patient window displaying an *Admit* button, click *Auto Display* in the menu bar. When the *Auto Display* button is enabled, the multi-patient viewer rearranges itself and should add at least one empty patient window with an *Admit* button:

NOTE

To enable or disable the *Auto Display* feature, from the multipatient viewer, click *Setup CIC* > *CIC Defaults* > *Display Configuration* > *Auto Display*.

- i. When you see an empty patient window displaying an *Admit* button, go to step 2.
- ii. If the message, *Reconfiguration Failed* appears, the multi-patient viewer is full of admitted patient windows and no empty patient windows are available. Use the following procedures (in the order presented) to remove displayed patient beds from the multi-patient viewer before you can admit a new patient:
 - See Removing viewed out-of-unit patient beds on page 7-6.
 - See Viewing patient beds from another in-unit CIC Pro center on page 7-5.
 - See Discharging an admitted patient on page 6-19.
- c. When a *Discharged* message is displayed in an unlocked patient window, you must clear the discharged bed from this unlocked window before you can admit a patient to this window. To clear the discharged bed, complete the following procedure:
 - i. Right click in the patient window you need to clear. The right click menu displays.
 - From the right click menu, click *Select Care Unit then Bed Number* > *None*. The patient window should now be empty except for an *Admit* button. Go to step 2.
- 2. Click *Admit* to display the *Admit* window.

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To automatically enter the patient demographics

To bypass the manual entry of the patient demographic information, you can search for and retrieve the information from a networked database.

WARNING

INCORRECT ALGORITHMS, ARRHYTHMIA PROCESSING, AND CALCULATIONS BASED ON PATIENT AGE—After manually updating or automatically retrieving patient demographic information from a network database, *always* confirm that the entered patient's date of birth matches the patient's actual date of birth. Otherwise the appropriate age-related algorithms, arrhythmia detection, and calculations will not be applied.

NOTE

Retrieving patient demographic information from a networked database requires a Hospital Information System (HIS). You may also know the HIS as an Aware Gateway or as a Quantitative Sentinel (QS).

NOTE

When using the patient's last name or first name as your search criteria, remember to delete the default patient identification number *999999999* from the *Patient ID* data field.

NOTE

When using a patient identification number as your search criteria, the CIC Pro center cannot successfully search for and match patient identification numbers containing lowercase letters. The CIC Pro center can successfully search for and match patient identification numbers containing all numbers or a combination of numbers and *upper case* letters.

Complete the following procedure to retrieve patient demographic information from a networked database:

- 1. From the *Admit* window, type one of the following patient search criteria into the appropriate data field:
 - Medical record number (patient identification number)
 - Last name
 - Room number
 - Bed number
- 2. Click *Request Admit Info* to display a list of possible patient matches and their demographic information.

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NOTE

If the message, *Server off network* is displayed, the Hospital Information System (HIS) is either not available or not present.

- 3. Review the displayed list of patients and demographic information to find the demographic information that matches the patient you are admitting.
- 4. When the demographic information from the list does not match your patient, click *Clear*. You must now manually enter the patient demographic information. See To manually enter the patient demographic information on page 6-14.
- 5. When demographic information from the list matches your patient, complete the following steps:
 - a. Click on the patient to highlight it.
 - b. Click Select to retrieve the demographic information.

WARNING

INCORRECT ALGORITHMS, ARRHYTHMIA PROCESSING, AND CALCULATIONS BASED ON PATIENT AGE—After manually updating or automatically retrieving patient demographic information from a network database, *always* confirm that the entered patient's date of birth matches the patient's actual date of birth. Otherwise the appropriate age-related algorithms, arrhythmia detection, and calculations will not be applied.

- c. Verify you selected the correct information by reviewing the displayed demographic information.
 - i. When this is the correct demographic information, go to Enter the bed number on page 6-15.
 - ii. When this is not the correct demographic information, click *Clear*.
 - iii. Repeat step 2 to step 5 of this procedure.

To manually enter the patient demographic information

Complete the following procedure to manually enter patient demographic information into data entry fields or select options from a list:

NOTE

Patient information entered here may be truncated on the CIC Pro center display based on limitations of the associated monitoring device.

- 1. Under *Last Name*, type the patient's last name.
- 2. Under *First Name*, type the patient's first name.
- 3. Under *Patient ID*, type the patient's medical record number (patient identification number).
- 4. Under *Age*, click the down arrow to display the list of age ranges. Choose the patient's age range from the displayed list.

WARNING

INCORRECT ALGORITHMS, ARRHYTHMIA PROCESSING, AND CALCULATIONS BASED ON PATIENT AGE—After manually updating or automatically retrieving patient demographic information from a network database, *always* confirm that the entered patient's date of birth matches the patient's actual date of birth. Otherwise the appropriate age-related algorithms, arrhythmia detection, and calculations will not be applied.

Enter the bed number

Complete the following procedure to enter the bed number:

NOTE

You must choose a bed number before you can admit a patient. Make sure the bed you want to select is on the network.

- 1. Next to *Bed*, click the down arrow to display a list of available patient beds.
- 2. Choose a bed number from the displayed list:
 - When the patient windows in the multi-patient viewer are assigned to specific windows (locked), only the current bed number is displayed. Complete the procedure, To automatically enter the patient demographics on page 6-12 or To manually enter the patient demographic information on page 6-14.
 - When the bed is a telemetry bed, select the bed name displaying an asterisk (e.g., ICU4*).
 - When the bed is a monitor, select the bed number identifying the monitor.
 - When the bed is a monitor or in *Combo* mode, select the bed number identifying the monitor.

Enter the source of the ECG data

Complete the following procedure to enter the source of the ECG data:

NOTE

You must choose the source of the ECG data before you can admit a patient.

- 1. Under *ECG From*, click the down arrow to display the list of ECG data sources.
- 2. Choose the source of the ECG data:
 - When the source of the ECG data is a transmitter, choose the TTX ID number matching the TTX ID number label located on the back of the transmitter.
 - When the source of the ECG data is a monitor, choose *Monitor*.

Admit the patient

Complete the following procedure to admit the patient:

1. Click Admit to admit the patient.

- 2. If the message *Would you like to start Full Disclosure*? is displayed, the full disclosure data collection method is set to *Manual*. To complete the admit process, you must select *Yes* or *No*.
- 3. If an *Admit Information Mismatch* window displays while you are trying to establish the *Combo* monitoring mode, the CIC Pro center has detected a mismatch of patient data between the hardwired bed and the telemetry bed. To resolve this issue, complete the following steps:



- a. Compare the patient data displayed in the *Admit Information Mismatch* window.
- b. To choose the correct patient information, click *Select* under the correct patient information.
- c. To cancel admitting this patient, click *Cancel* to close this window and return to the *Admit* window. Make any necessary corrections to the patient information before trying to re-establish the *Combo* monitoring mode.
- 4. Verify the patient's window (located in the multi-patient viewer) is displaying parameter data and waveforms:
 - When the patient's data appears in the patient window, the patient is being monitored by the CIC Pro center.
 - When no patient information is displayed in the patient window, the patient is not being monitored by the CIC Pro center. See Troubleshooting on page D-1.

Changing patient demographic information

Once a patient is admitted, you may add or change patient demographic information:

- 1. From the multi-patient viewer, click on the patient you want to change. The single patient viewer displays.
- 2. From the single patient viewer, click *Admit* to display the *Admit* window.
- 3. Make changes to the patient demographic information.

WARNING

INCORRECT ALGORITHMS, ARRHYTHMIA PROCESSING, AND CALCULATIONS BASED ON PATIENT AGE—After manually updating or automatically retrieving patient demographic information from a network database, *always* confirm that the entered patient's date of birth matches the patient's actual date of birth. Otherwise the appropriate age-related algorithms, arrhythmia detection, and calculations will not be applied.

4. Click Save.

Moving a patient to a different bed

You can move a patient to another bed in the same care unit.

The following guidelines apply when moving an in-unit patient between locked and unlocked beds:

- You can move an unlocked bed to another available unlocked bed.
- You can move a locked bed to another available locked bed.
- You can move an unlocked bed to an available locked bed.

NOTE

You cannot move a patient to an unlocked bed if an empty patient window is not available. When the message *Patient not monitored* displays, you will not be allowed to move the patient.

Move a patient to a different bed

Complete the following procedure to move an in-unit patient to a different bed:

- 1. From the multi-patient viewer, click on the patient you want to move. The single patient viewer displays.
- 2. From the single patient viewer, click *Admit* to display the *Admit* window.
- 3. Click on the down arrow next to *Bed* to display a list of available beds. Choose the bed you want to move the patient to:
 - Make sure the bed is on the network.
 - When the bed is a telemetry bed, select the bed name with an asterisk appended to the name (e.g., ICU4*).
 - When the bed is a monitor, select the bed number identifying the monitor.
- 4. Click *Move* to move the patient to the bed you selected. The message *Are you sure you want to move this patient?* displays.
- 5. Verify you are moving the correct patient:
 - When this is the patient you want to move, click *Yes*.
 - When this is not the patient you want to move, click *No* to cancel this action and display the multi-patient viewer.

Move a patient to telemetry monitoring

To discharge a patient from the bedside monitor, but remain on telemetry monitoring, complete the following procedure:

- 1. From the multi-patient viewer, click on the patient you want to move. The single patient viewer displays.
- 2. From the single patient viewer, click Admit to display the Admit window.
- 3. Click on the down arrow next to *Bed* to display a list of available telemetry beds.
- 4. Choose the bed you want to move the patient to. Be sure to choose a bed name with an asterisk appended to the name (e.g., ICU4*).
- 5. Click *Move* to move the patient to the bed you selected. The message *Are you sure you want to move this patient?* displays.
- 6. Verify you are moving the correct patient:
 - When this is the patient you want to move, click *Yes*. This will discharge the patient from the monitor.
 - When this is not the patient you want to move, click *No* to cancel this action and display the multi-patient viewer.

Move a telemetry patient to a different transmitter

At some time, you may need to replace an admitted patient's transmitter with a different transmitter.

Complete the following procedure to start telemetry monitoring using a replacement transmitter:

- 1. Exchange the transmitters.
- 2. From the *Admit* window, under *ECG From*, click the down arrow to display a list of ECG data sources.
- 3. Choose the TTX ID number matching the TTX ID number label located on the back of the transmitter.
- 4. Click Save.

Switching transmitters

If you wish to switch an transmitter while a patient is admitted from a CD Telemetry-LAN transmitter (Apex S, Apex 5, Apex 3 or CD transmitter) or vice versa, you must follow this procedure:

- Discharge the patient (losing stored data).
- Switch transmitters.
- Re-admit the patient.

Monitoring will stop if you switch transmitters while a patient is admitted. Attempting to change the TTX ID number for an admitted telemetry patient at the CIC Pro center with generate the message *Invalid TTX*.

Discharging an admitted patient

Discharging a patient at the CIC Pro center completes the following tasks:

- Discharges a telemetry patient from CIC Pro center.
- Discharges a hard-wired patient from both the CIC Pro center and from the monitor.
- Deletes the discharged patient's locally stored patient data from the CIC Pro center.

Complete the following procedure to discharge an admitted patient from the CIC Pro center:

- 1. Disconnect all patient cables.
- 2. From the multi-patient viewer, click in the patient's window you want to discharge. The single patient viewer displays for this patient.
- 3. From the single patient viewer, click *Admit* to display the *Admit* window.
- 4. Click *Discharge*. A window displays the patient name, patient ID, and bed number. The message *Are you sure you want to discharge this patient?* also displays.
- 5. Verify you are discharging the correct patient:
 - When this is the patient you want to discharge, click *Yes*. This will discharge the patient.

The CIC Pro center displays a message similar to the following in the patient window, *Discharging patient...* and then displays the multi-patient viewer. In the multi-patient viewer, the discharged patient window displays one of the following types of information:

- When a telemetry patient is discharged from a locked patient window, the message *Discharged* is displayed in the patient window.
- When a telemetry patient is discharged from an unlocked patient window, an *Admit* button is displayed in the patient window.
- When a hard-wired patient is discharged, the message *Discharged* and the bed name are displayed in the patient window.
- When this is not the patient you want to discharge, click *No* to cancel this action and display the multi-patient viewer.

Combo and Rover Combo monitoring

Guidelines

The following are guidelines to remember when monitoring in *Combo* or *Rover Combo* monitoring modes.

- When monitoring ECG from telemetry:
 - ECG limits and *Arrhythmia Alarm Levels* are not your monitor defaults, but are the telemetry defaults from the central station. You can adjust these settings at the monitor.

- The alarm pause feature (if available on your transmitter) is honored at the monitor.
- You should not turn off the monitor until you have discharged the patient from the monitor.
- Second V lead data is not sent to the monitor from the transmitter. If you wish to see telemetry second V lead data, you must view the telemetry patient.
- When switching ECG monitoring from the monitor to telemetry:
 - Arrhythmia alarm histories from the monitor are merged in the telemetry system. CD Telemetry-LAN software version 5 or later is required.
 - If you discharge the monitor, the telemetry *Arrhythmia Alarm Levels* will be the same as the *Arrhythmia Alarm Levels* supported by the monitor. Therefore, when the monitor uses the BASIC software package, only lethal

Arrhythmia Alarm Levels will be detected from telemetry. If the monitor has the *CARDIAC* software package, full *Arrhythmia Alarm Levels* will be detected from telemetry.

- When switching ECG monitoring from telemetry to the monitor:
 - Telemetry is automatically discharged and the most recent 36 alarm histories are transferred to the monitor.
 - The ECG limits, *Arrhythmia Alarm Levels* and display defaults are recalled from the monitor defaults.

NOTE

It is not likely that the *Combo* or *Rover Combo* monitoring modes are used when the patient-monitor type is *OPERATING ROOM*.

NOTE

Users should be aware of a possible time discrepancy between the waveforms from the telemetry device and the waveforms from the monitor. Users should not consider these waveforms to be synchronous. If absolute synchronicity is desired, *Combo* mode should be discontinued and the ECG waveforms should be acquired via the hard-wired monitor.

Constraints

For bedside monitors that allow the ECG parameter to be turned off, the following constraints apply.

- SpO₂ becomes the primary parameter for patient monitoring.
- The patient's heart rate is determined from pulse oximetry.
- The SpO₂ and SpO₂ Rate parameter alarm levels become *Warning*.
- The SpO₂ pulse search and probe off system status alarm levels become *Warning*.
- Connecting the ECG cable to the monitor will *not* automatically turn the ECG parameter on.
- When the monitor is connected to a Dash Responder defibrillator, the ECG parameter will either automatically turn on or remain turned on.

- When the monitor alarms are paused *and* the ECG parameter is turned off, the following network devices will *not* display an *ALARM PAUSE* text message for that monitor.
 - CIC Pro center using software version 3.0 or earlier.
 - Centralscope central station using any version of software.

ECG setting source

Selecting ECG setting source

When the monitor is in *Combo* mode, you can select whether the monitor uses its own ECG settings or the telemetry ECG settings.

- **TELE DEFINED** Use the telemetry ECG settings. This is the factory default.
- USER DEFINED Use the monitor's ECG settings if telemetry is not admitted. Use the telemetry ECG settings if telemetry IS admitted.

The following ECG settings are affected when you select an ECG setting source:

- Arrhythmia Alarm Levels
- *HR*, *PVC* and *ST* parameter alarm levels
- ECG SIZE
- DETECT PACE
- ARRHYTHMIA
- ST ANALYSIS
- LEAD ANALYSIS
- *HR HIGH LIMIT* and *HR LOW LIMIT*
- PVC LIMIT and PVC state
- Beat Pause interval
- **ST** Limit

For more information, refer to the appropriate bedside monitor's operator's manual.

ECG setting source when entering Combo mode

WARNING

INCORRECT ALGORITHMS, ARRHYTHMIA PROCESSING AND CALCULATIONS BASED ON PATIENT AGE — After manually updating or automatically retrieving patient demographic information from a network database, *always* confirm that the entered patient's date of birth matches the patient's actual date of birth. Otherwise the appropriate age-related algorithms, arrhythmia detection, and calculations will not be applied.

NOTE

It is possible (but not a normal operation), to admit a patient to both a telemetry bed and a hardwired bed before entering *Combo* mode. For example, bed101* (telemetry) *and* bed101 (monitor) are two separate beds for the same patient. When you enter *Combo* mode in this situation, the ECG setting source is always telemetry.

The following tables indicate the source (monitor or telemetry) of ECG settings when entering *Combo* mode.

Tele Defined					
Monitor	Telemetry	Entering Combo Mode	ECG Setting Source		
Not admitted	Not admitted	>			
Admitted	Not admitted	>	Telemetry		
Not admitted	Admitted	>			

User Defined				
Monitor	Telemetry	Entering Combo Mode	ECG Setting Source	
Not admitted	Not admitted	>	Monitor	
Admitted	Not admitted	>	WONTO	
Not admitted	Admitted	>	Telemetry	

Notice that selecting *Tele Defined* means the ECG setting source is always telemetry when entering *Combo* mode, while the ECG setting source for *User Defined* depends on whether the patient is admitted to the monitor or telemetry when entering *Combo* mode.

ECG setting source when exiting combo mode

When discharging from telemetry, but remaining admitted to the monitor (exiting *Combo* mode), the ECG setting source (monitor or telemetry) depends on the *COMBO DEFAULT SOURCE* selection.

- **TELE DEFINED** When exiting *Combo* mode, the ECG settings return to the monitor's ECG custom defaults.
- USER DEFINED When exiting Combo mode, the ECG settings for the current patient persist until the patient is discharged from the monitor.

For both the **TELE DEFINED** and **USER DEFINED** options, when discharging from the monitor (exiting **Combo** mode), but remaining admitted to telemetry, the ECG settings for the current patient persist until the patient is discharged from telemetry.

7 Viewing real-time patient data

