

Utilizing Technology in Alarm Management

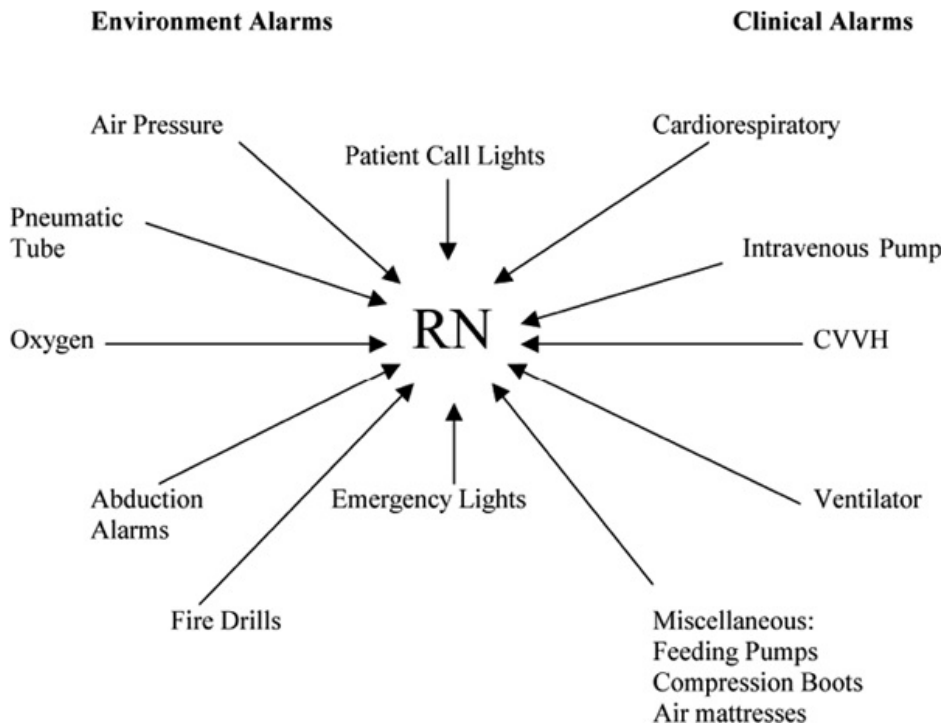
Emily Mengel, Clinical Engineer
Seth Blanchard, Site Coordinator



Overview

- What is alarm management and why does it matter?
- Historical view of alarms
- Best Practices from other hospitals
- Current alarm situation
- Tools available
- Future ideas and tools

What Is Alarm Management?



What Is Alarm Management?

🔊 It's quite **alarming**...

» Alarm fatigue occurs when hospital staff become desensitized to alarm alerts causing missed alarms or delayed response



216 deaths

» Between 2005 and 2010, alarm fatigue caused 216 hospital deaths



#1 Hazard

» Voted the top technology hazard of 2012 by ECRI, beating out 2011's radiation exposure



942 alarms each day

» 942 alarms sound off each day in a typical 15-bed unit



1 alarm every 90 seconds



90% are unanswered

» Alarms are reported to be unanswered 90% of the time



It's no wonder that alarm fatigue is so prevalent



Locate

» Locate the source of each alarm



Limit

» Limit active alarms based on patient needs



Volume

» Set volume accordingly

How can alarm fatigue be prevented?

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Why Does it Matter?



 | METRO | SPORTS | BUSINESS | OPINION | RHODE ISLAND | POLITICS | EDUCATION | LIFESTYLE | MARIJUANA | ARTS | MAGAZINE | CARS | REAL ESTATE | EVENTS

Suit over cardiac monitor settled

MGH patient died despite alarms

By [Liz Kowalczyk](#) Globe Staff, November 28, 2011, 12:06 a.m.



The family of a man who died at Massachusetts General Hospital when nurses did not respond to alarms on his cardiac monitor - a death that focused national attention on the dangers of “alarm fatigue” among hospital staff - settled its case against the hospital for \$850,000.

Mass. General and the patient’s family reached an agreement in May, but the private settlement was never filed in court and the parties have not discussed it publicly until now.

“Much to Mass. General’s credit, they recognized the error and tried to do right by the family,” said their lawyer, Boston attorney Andrew Meyer. “They are in good faith trying to prevent the problem from occurring in the future. The family was appreciative.”

What started it all

- 2006 - Johns Hopkins Case Study
- 2013 - The Joint Commissions National Patient Safety Goal NPSG.06.01.01

What steps We took at WakeMed

- 2013 - Created an “Alarm Management Steering Committee” comprised of the Executive Director of our Cardiac Nursing Departments, Clinical Engineering Director, and Clinical Engineer
 - “Clinical Alarms Assessment” was sent to Nursing Staff
- 2014 - Conducted a trial in 2 ICU departments
- 2015 - Created system wide parameter defaults on monitors
- 2016 - Implemented Alarms Policy
 - “Go Live”

WakeMed Alarm Reduction Pilot

Pilot Data Analysis

Pilot Reductions in Alarms

42% High Priority

55% Med Priority

49% SpO₂

Week Prior to Pilot Alarm Counts

422 High Priority

9024 Med Priority

2954 SpO₂

Pilot – Week 1 Alarm Counts

313 High Priority

4949 Med Priority

2421 SpO₂

Pilot – Week 2 Alarm Counts

246 High Priority

4044 Med Priority

1492 SpO₂

Initial Data Gathering

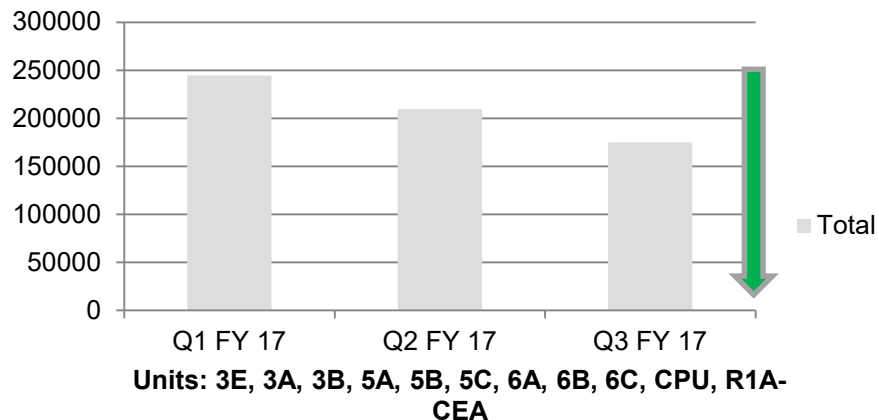
- 1 week snapshots of total alarms
 - Manual gathering log file from each unit
 - Input into MS Excel Macro
- Built graphs for each unit and area



Parameters	PULSE OX %		HEART RATE BPM		BP SYSTOLIC mmHg		BP DIASTOLIC mmHg		BP MEAN mmHg		ST Elev/Dep	RESP RATE Breaths / min	
	Low	High	Low	High	Low	High	Low	High	Low	High		Low	High
Departments Raleigh Campus TSC CENTRAL TELEMETRY 3A, 3B, 3E, 5A, 5B, 5C, 6A, 6B, 6C	88	105/OFF	48	155	80	180	40	100	60	140	-2/2 audible	OFF	60

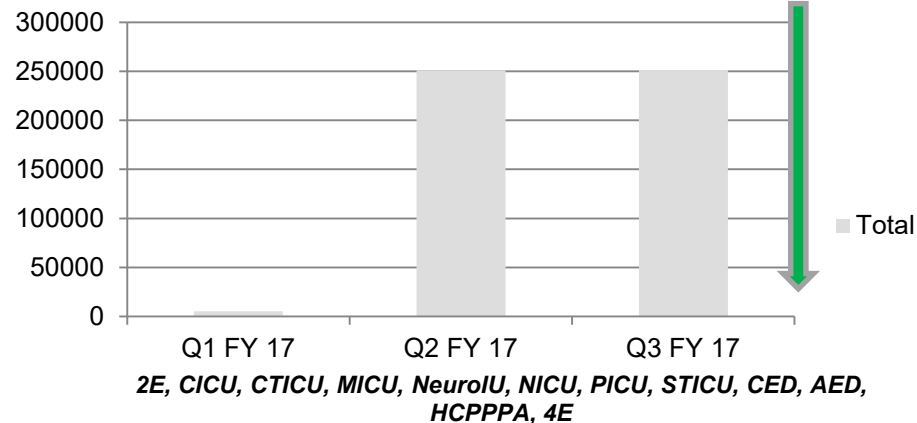
RC Total Alarms

Units linked to TSC



RC Total Alarms

Non-TSC Units & ICUs



Bringing in Data Mining Company

- Brought in vendors to trial data analytic software
- Chose Excel Medical's Alarm Navigator & BedMaster Software

Best Practices

- What can we learn from other hospitals
- How can we apply this to WakeMed



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of Alabama®



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Re-vamp of Alarm Committee

- 1 year post implementation
 - Alarms dropped at first
 - Started creeping up
- New committee formed

Excel Medical Overview

- 5 Data Collection Servers
- 1 Shared SQL server
- 2 Applications
 - BedMaster
 - Currently Client Based
 - Alarm Navigator
 - Web-Hosted interface

How do we currently gather data?



Alarm Navigator

Welcome EMILY MENGEL | Home | User Accounts | Help | Logout

Watches | Saved Reports

Add Watch

Alarm Watches

Name	Description	Shared By / Shared With
All Alarms All Units		
All SpO2		1 User
co2		
nicu		
NICU Special Case	SpO2 Watching Certain patients	

View 1 - 5 of 5

Today's Alarms Updated: 09:45

Filter for Today's Alarms: All Units

Crisis: 168
Warning: 2,293
Advisory: 3,827
System: 652

Total: 6,940

Most Crisis:
 NICUB_39A - 16
 NICUA_11 - 16
 NICUA_09A - 11
 NICUB_34 - 11
 NICUB_36 - 9
 SCN_2N05A - 8
 SCN_2N01A - 8
 NICUB_47 - 7
 CICU_03 - 7
 NICUA_19A - 5

Most Warning:
 CICU_21 - 162
 R2E_41 - 126
 CTICU_06 - 99
 MICU_05 - 98
 CICU_06 - 87
 CICU_26 - 84
 CICU_05 - 77
 CTICU_07 - 75
 NICUB_33 - 70
 CICU_22 - 62

Longest Crisis/Warning Duration (hrs:min:sec)
 ICU_286 - NIBP SYS HIGH (1:09:26)
 MICU_05 - SPO2 LOW (0:48:46)
 CICU_21 - SPO2 LOW (0:44:34)
 CICU_05 - SPO2 LOW (0:39:24)
 CTICU_06 - ACC VENT (0:38:00)
 CICU_09 - NIBP M LOW (0:28:16)
 CICU_06 - SPO2 LOW (0:26:24)
 CTICU_03 - SPO2 LOW (0:25:50)
 R2E_02 - SPO2 LOW (0:20:45)
 NICUB_39A - SPO2 LOW (0:20:35)

Today's Alarms - All Units

The chart displays the number of alarms per hour for four categories: Crisis (red), Warning (yellow), Advisory (blue), and System (teal). The x-axis represents time from 26 Sep 00:00 to 08:00. The y-axis represents the number of alarms, ranging from 0 to 600. The Advisory category shows the highest volume, peaking at approximately 500 around 04:00. The Warning category peaks at about 300, Crisis at 100, and System at 150.

How do we currently gather data?



Watch Stats

	18,256
Crisis	198
Warning	11,401
Advisory	5,333
System	1,323

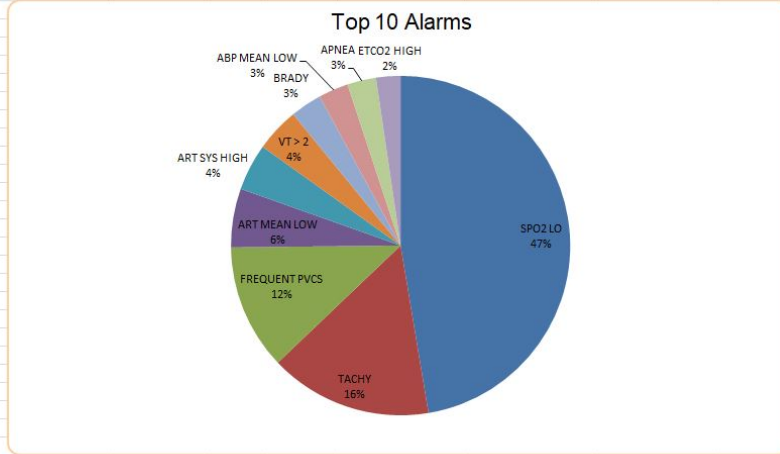
MICU Alarms

SPO2 LO	6,899
TACHY	2,260
FREQUENT PVCs	1,741
ART MEAN LOW	814
ART SYS HIGH	650
VT > 2	611
BRADY	437
ABP MEAN LOW	416
APNEA	400
ETCO2 HIGH	338
NO SPO2 PROBE	299
CHECK NIBP	280
TEMP REMOVED	265
R ON T	262
ACC VENT	219
ART SYS LOW	214
NIBP M LOW	212
ART MEAN HIGH	181

MICU Top 10 Total Durations (hrs:min:sec)

PDM REMOVED	7:30:34
PDM REMOVED	7:00:49
NIBP manual	5:58:00
PDM REMOVED	5:07:31
PDM REMOVED	4:35:28
PDM REMOVED	4:27:09
PDM REMOVED	3:44:40
NO SPO2 PROBE	2:35:28
NO SPO2 PROBE	2:02:40
CHECK NIBP	1:55:56

Date	Unit-Bed	Name	ID	Level	Dur (s)	Message	Limit Type	Offending Value
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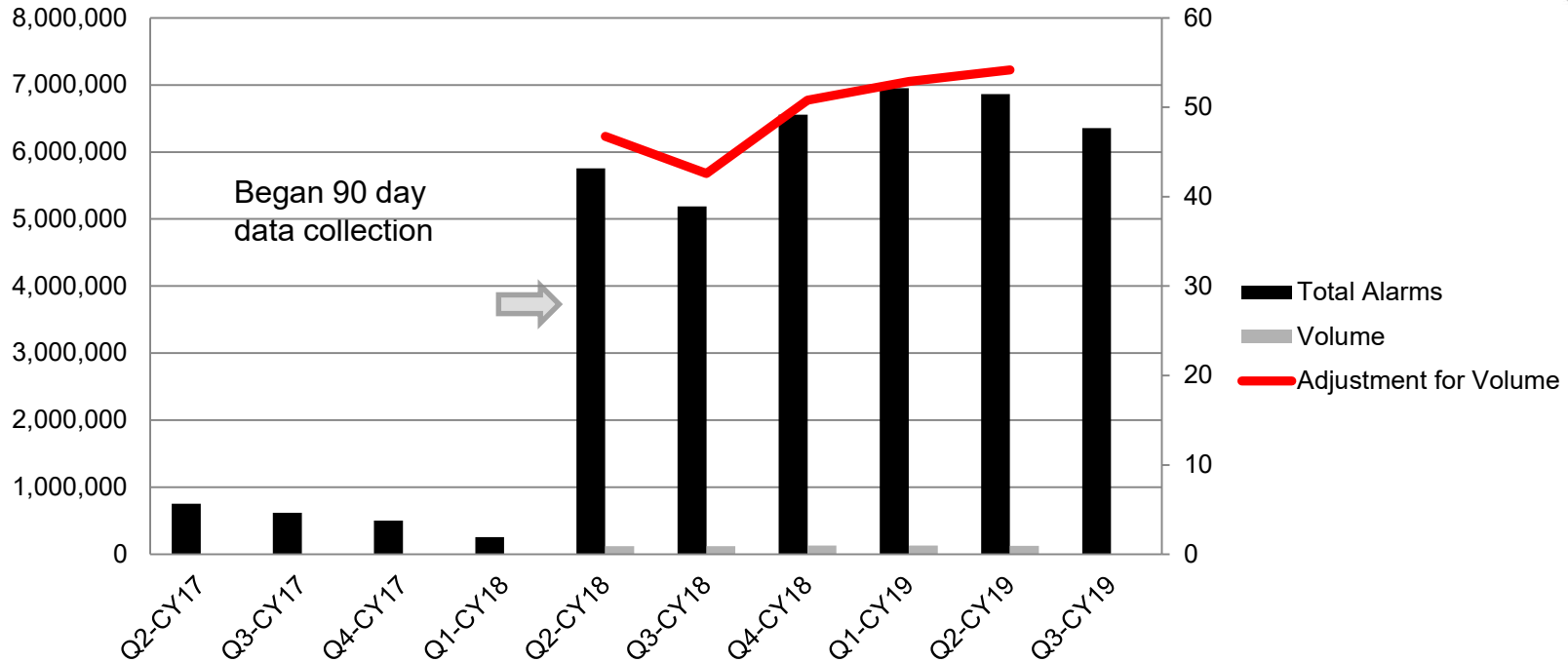


How do we currently gather data? Cont.



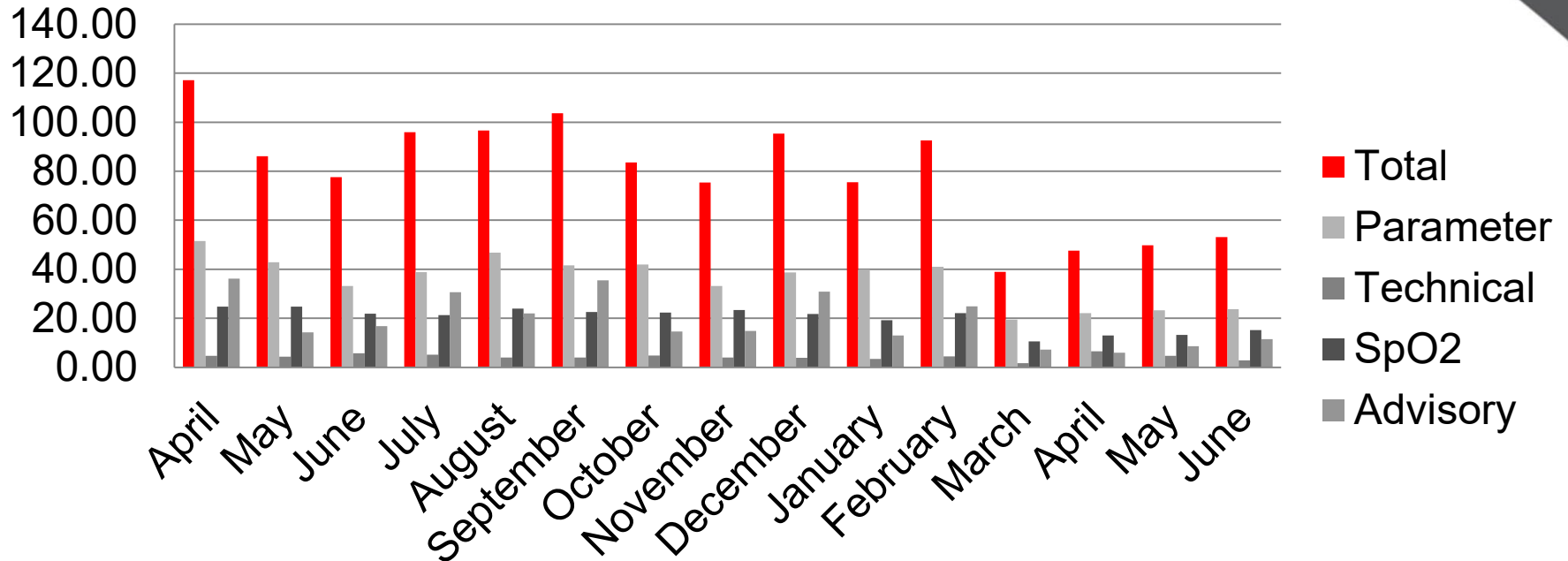
Dept	Crisis	Warning	System	Spo2	Advisory	TOTALS	Parameter
	1,071	30,714	5,818	19,034	83,273		31,785
	589	17,982	1,183	5,364	2,833		18,571
	125	3,315	1,489	1,245	2,061		3,440
	358	13,931	1,096	8,675	7,337		14,289
	103	6,264	1,949	3,048	1,094		6,367
	9,312	30,527	16,708	50,058	18,026		39,839
	2,862	10,355	5,138	8,529	8,778		13,217
	438	16,982	4,299	8,914	39,905		17,420
	185	9,721	846	4,779	3,236		9,906
TOTAL	15,043	139,791	38,526	109,646	166,543		154,834
TOTAL ALARMS						359,903	

Total Alarms Adjusted for Volume

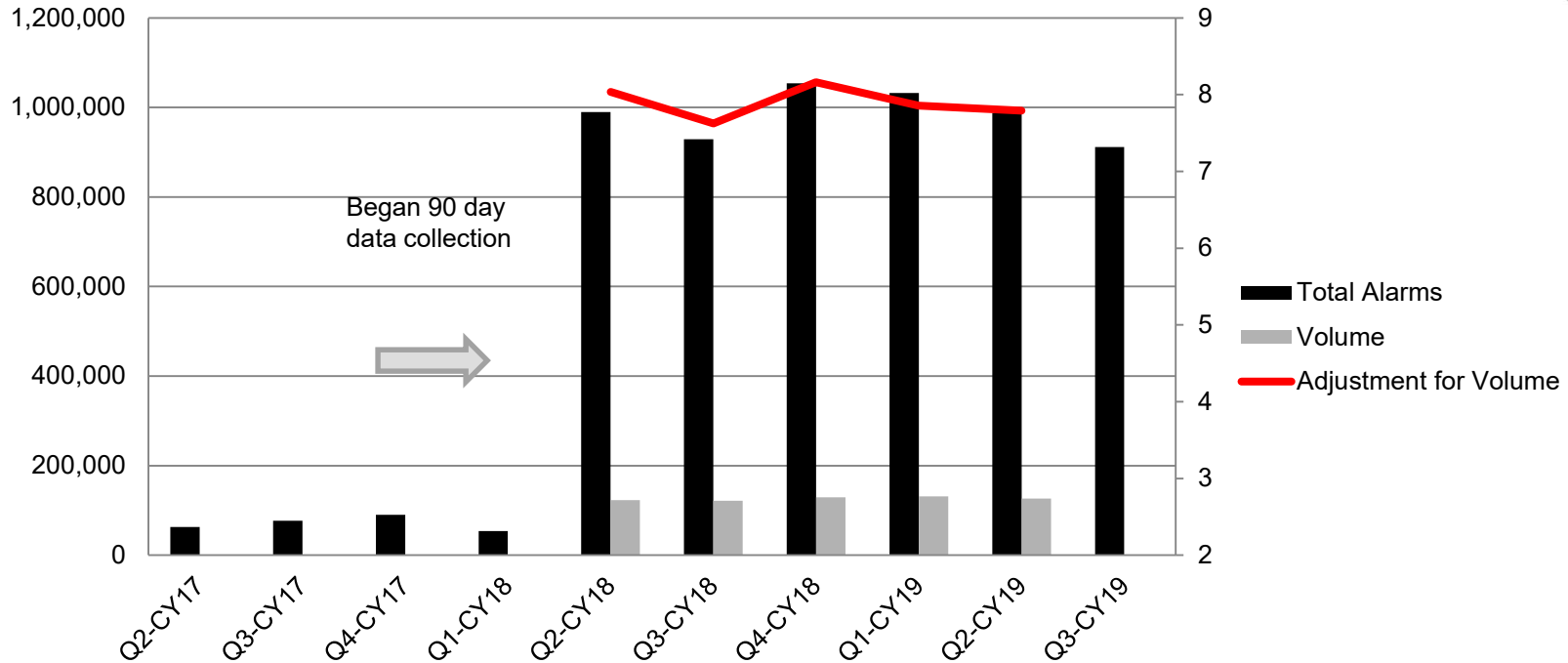


Total Alarms Department

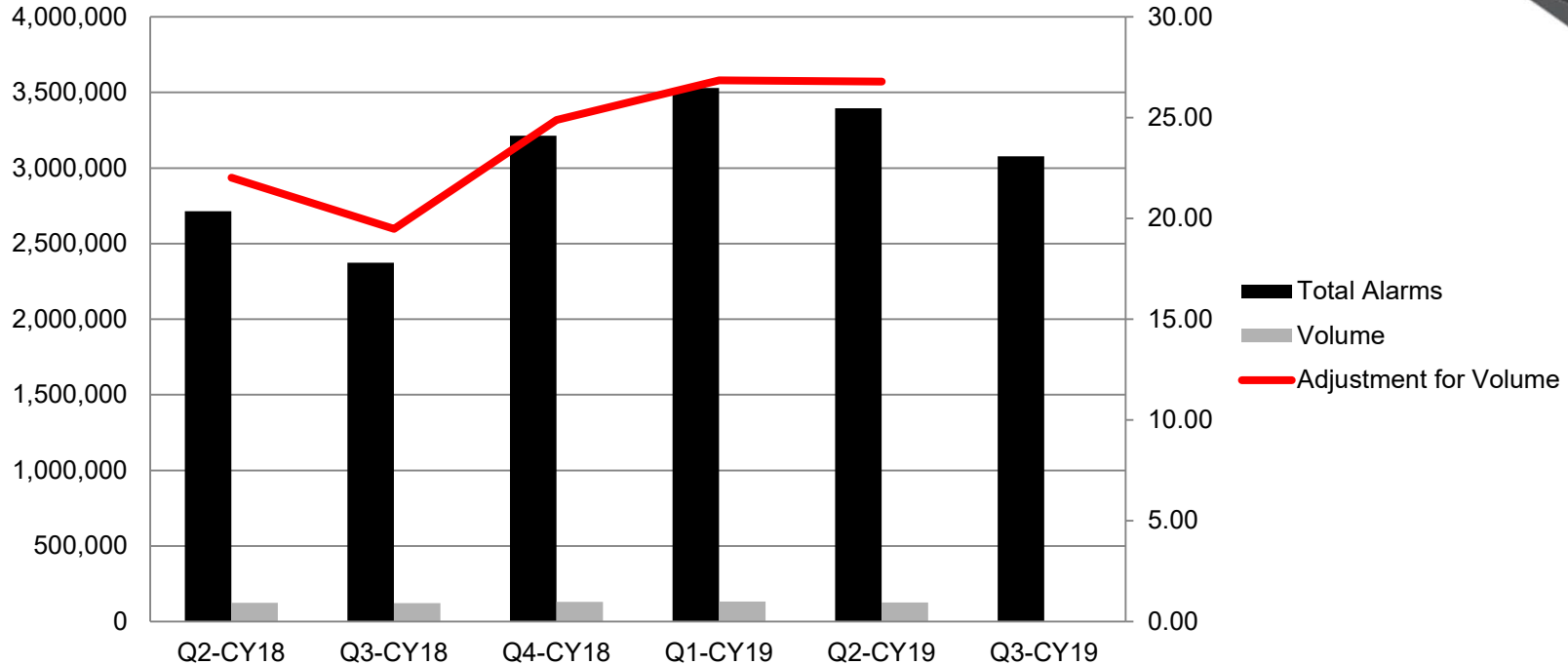
STICU Alarms Adjusted for Volume



System-Wide Technical Alarms



System-Wide Advisory Alarms



**Advisory Alarms not collected prior to Q2-CY18

What Tools Are Currently Available?

- Alarm Navigator- geared towards managers/supervisors
- BedMaster- geared towards bedside nurses

BedMaster

Recent Alarms(4 hrs)	Device	TTX#
0 0 0 1	Telem...	8637
0 0 0 0	Telem...	8723
0 0 0 0	Telem...	8531
0 0 0 0	Telem...	8630
0 1 12 0	Telem...	8537
0 0 0 1	Telem...	8605
0 0 0 2	Telem...	8636
0 2 2 35	Telem...	8625
0 9 6 13	Telem...	8682
0 0 3 1	Telem...	8559
0 8 0 0	Telem...	8631
0 0 0 0	Telem...	8586

Patient:

Started:

Interval:

Label:

Stopped:

Duration:

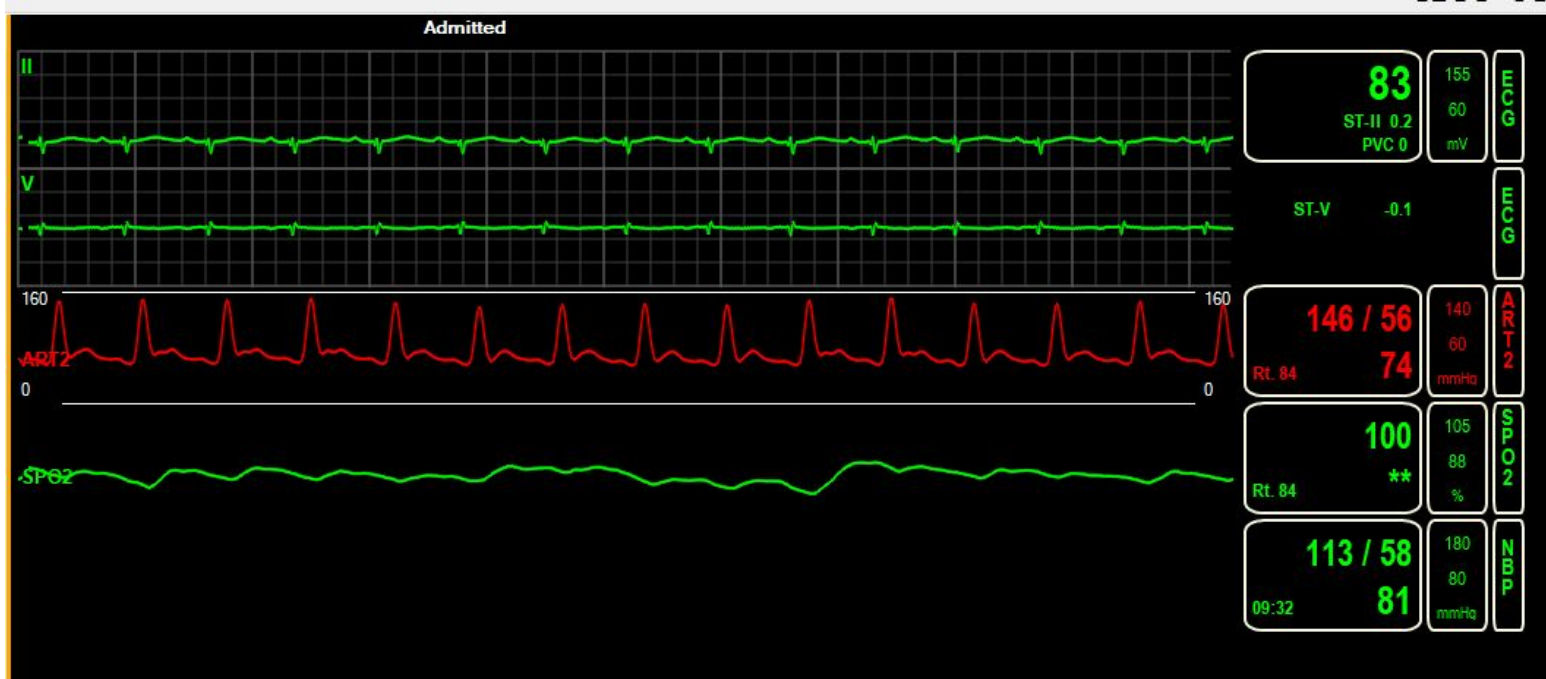
Alarm Limits

	9/10/19	9/8/19	9/7/19			
	12:46:24	14:01:19	20:40:18			
ST-V6 LO	-2.0	-2.0	-2.0			
ST-V6 HI	2.0	2.0	2.0			
ST-V5 LO	-2.0	-2.0	-2.0			
ST-V5 HI	2.0	2.0	2.0			
ST-V4 LO	-2.0	-2.0	-2.0			
ST-V4 HI	2.0	2.0	2.0			
ST-V3 LO	-2.0	-2.0	-2.0			
ST-V3 HI	2.0	2.0	2.0			
ST-V2 LO	-2.0	-2.0	-2.0			
ST-V2 HI	2.0	2.0	2.0			
ST-V1 LO	-2.0	-2.0	-2.0			
ST-V1 HI	2.0	2.0	2.0			
ST-III LO	-2.0	-2.0				
ST-III HI	2.0	2.0				
ST-II LO	-2.0	-2.0				
ST-II HI	2.0	2.0				
ST-I LO	-2.0	-2.0				
ST-I HI	2.0	2.0				
ST-AVR LO	-2.0	-2.0				
ST-AVR HI	2.0	2.0				
ST-AVL LO	-2.0	-2.0				
ST-AVL HI	2.0	2.0				
ST-AVF LO	-2.0	-2.0				
ST-AVF HI	2.0	2.0				
PVC LO	0	0	0			
PVC HI	10	10	10			
HR LO	43	43	48			
HR HI	155	155	155			



BedMaster

BedMaster



Department Rounding

- One-on-one meetings with departments
- Education on Alarm Management tools
- Filtering through data to identify areas for improvement through education

Using Alarm Navigator to Target Areas for Reduction

Unit Watch Stats

6A	34,372
Crisis	
Warning	
Advisory	31,031
System	3,341

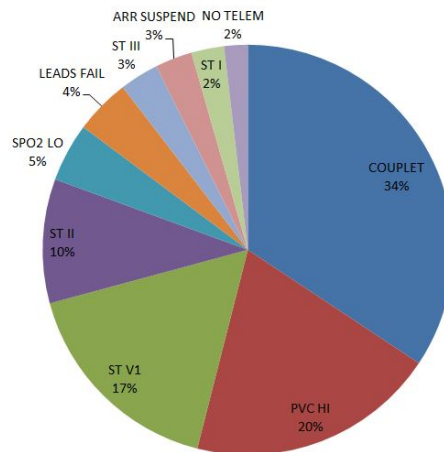
6A Alarms

COUPLET	11,693
PVC HI	6,694
ST V1	5,733
ST II	3,338
SPO2 LO	1,571
LEADS FAIL	1,490
ST III	1,046
ARR SUSPEND	994
ST I	879
NO TELEM	633
NURSE CALL	96
SPO2 PROBE	96
ATRIAL FIB	50
LF: NO TELEM	31
BRADY	19
ST V2	5
HR HI	2
ST-I LO	1
ARRHY SUSPEND	1

6A Top 10 Total Durations (hrs.min.sec)

SPO2 PROBE	12:46:46
ST I	7:05:18
SPO2 PROBE	5:09:10

Unit Top 10 Alarms



Using Alarm Navigator to Target Areas for Reduction

Date	Unit-Bed	Name	ID	Level	Dur (s)	Message	Limit Type
Sun 04-Aug-2019 10:02:34	MICU_01	Doe, Jane	9999999	Warning	224	NIBP M LOW	NIBP M LOW
Sun 04-Aug-2019 10:04:21	MICU_01	Doe, Jane	9999999	Warning	0	TACHY	
Sun 04-Aug-2019 10:10:28	MICU_01	Doe, Jane	9999999	Warning	199	NIBP M HIGH	NIBP M HIGH
Sun 04-Aug-2019 10:14:15	MICU_01	Doe, Jane	9999999	Warning	128	NIBP DIA HIGH	NIBP DIA HIGH
Sun 04-Aug-2019 10:15:34	MICU_01	Doe, Jane	9999999	Warning	185	NIBP SYS HIGH	NIBP SYS HIGH
Sun 04-Aug-2019 10:24:47	MICU_01	Doe, Jane	9999999	Crisis	4	V TACH	
Sun 04-Aug-2019 10:24:58	MICU_01	Doe, Jane	9999999	Advisory	48	FREQUENT PVCs	
Sun 04-Aug-2019 10:26:43	MICU_01	Doe, Jane	9999999	Advisory	0	APNEA IMP	
Sun 04-Aug-2019 10:30:24	MICU_01	Doe, Jane	9999999	Warning	122	NIBP DIA HIGH	NIBP DIA HIGH
Sun 04-Aug-2019 10:30:30	MICU_01	Doe, Jane	9999999	System	44	CHECK NIBP	
Sun 04-Aug-2019 11:07:23	MICU_01	Doe, Jane	9999999	Warning	10	TACHY	
Sun 04-Aug-2019 11:07:55	MICU_01	Doe, Jane	9999999	Warning	2	TACHY	
Sun 04-Aug-2019 11:08:09	MICU_01	Doe, Jane	9999999	Advisory	0	ART MEAN LOW	ART MEAN LOW
Sun 04-Aug-2019 11:08:18	MICU_01	Doe, Jane	9999999	Warning	0	TACHY	
Sun 04-Aug-2019 11:08:30	MICU_01	Doe, Jane	9999999	Warning	4	TACHY	
Sun 04-Aug-2019 11:08:53	MICU_01	Doe, Jane	9999999	Advisory	0	ART MEAN LOW	ART MEAN LOW
Sun 04-Aug-2019 11:09:16	MICU_01	Doe, Jane	9999999	Warning	8	TACHY	
Sun 04-Aug-2019 11:09:29	MICU_01	Doe, Jane	9999999	Warning	12	TACHY	
Sun 04-Aug-2019 11:09:44	MICU_01	Doe, Jane	9999999	Warning	12	TACHY	
Sun 04-Aug-2019 11:10:55	MICU_01	Doe, Jane	9999999	Advisory	38	ART MEAN LOW	ART MEAN LOW
Sun 04-Aug-2019 11:11:47	MICU_01	Doe, Jane	9999999	Advisory	66	ART MEAN LOW	ART MEAN LOW
Sun 04-Aug-2019 11:13:35	MICU_01	Doe, Jane	9999999	Advisory	342	APNEA IMP	
Sun 04-Aug-2019 11:14:47	MICU_01	Doe, Jane	9999999	Warning	6	ACC VENT	
Sun 04-Aug-2019 11:18:31	MICU_01	Doe, Jane	9999999	Advisory	12	ATRIAL FIB	
Sun 04-Aug-2019 11:19:53	MICU_01	Doe, Jane	9999999	Advisory	88	APNEA IMP	
Sun 04-Aug-2019 11:23:37	MICU_01	Doe, Jane	9999999	Advisory	0	APNEA IMP	
Sun 04-Aug-2019 11:31:40	MICU_01	Doe, Jane	9999999	Advisory	1,146	ART MEAN LOW	ART MEAN LOW
Sun 04-Aug-2019 12:00:12	MICU_01	Doe, Jane	9999999	System	534	NIBP MANUAL	
Sun 04-Aug-2019 12:25:04	MICU_01	Doe, Jane	9999999	Warning	659	NIBP M LOW	NIBP M LOW
Sun 04-Aug-2019 12:25:04	MICU_01	Doe, Jane	9999999	Warning	1,143	NIBP SYS LOW	NIBP SYS LOW
Sun 04-Aug-2019 12:39:01	MICU_01	Doe, Jane	9999999	Warning	2	TACHY	
Sun 04-Aug-2019 12:39:04	MICU_01	Doe, Jane	9999999	Warning	6	VT > 2	
Sun 04-Aug-2019 12:43:14	MICU_01	Doe, Jane	9999999	System	14	CHECK NIBP	

Using Alarm Navigator to Target Areas for Reduction



Date	Unit-Bed	Name	ID	Level	Dur (s)	Message
Sun 04-Aug-2019 10:30:30	MICU_06	Doe, Jane	9999999	System	44	CHECK NIBP
Sun 04-Aug-2019 12:00:12	MICU_06	Doe, Jane	9999999	System	534	NIBP MANUAL
Sun 04-Aug-2019 12:43:14	MICU_06	Doe, Jane	9999999	System	14	CHECK NIBP
Sun 04-Aug-2019 13:30:15	MICU_06	Doe, Jane	9999999	System	3,334	NIBP MANUAL
Sun 04-Aug-2019 14:01:32	MICU_06	Doe, Jane	9999999	System	25	CHECK NIBP
Sun 04-Aug-2019 14:01:46	MICU_06	Doe, Jane	9999999	System	8	NO SPO2 PROBE
Sun 04-Aug-2019 14:20:11	MICU_06	Doe, Jane	9999999	System	12	NIBP MANUAL
Sun 04-Aug-2019 14:36:18	MICU_06	Doe, Jane	9999999	System	38	NIBP MANUAL
Sun 04-Aug-2019 14:46:46	MICU_06	Doe, Jane	9999999	System	22	CHECK NIBP
Sun 04-Aug-2019 15:01:53	MICU_06	Doe, Jane	9999999	System	1,356	CHECK NIBP
Sun 04-Aug-2019 15:05:06	MICU_06	Doe, Jane	9999999	System	14	NO SPO2 PROBE
Sun 04-Aug-2019 15:53:58	MICU_06	Doe, Jane	9999999	System	40	ARRH PAUSED
Sun 04-Aug-2019 15:54:42	MICU_06	Doe, Jane	9999999	System	12	ARRH PAUSED
Sun 04-Aug-2019 16:00:11	MICU_06	Doe, Jane	9999999	System	400	NIBP MANUAL
Sun 04-Aug-2019 16:01:35	MICU_06	Doe, Jane	9999999	System	372	NO SPO2 PROBE
Sun 04-Aug-2019 16:01:54	MICU_06	Doe, Jane	9999999	System	276	CHECK NIBP
Sun 04-Aug-2019 16:03:05	MICU_06	Doe, Jane	9999999	System	833	SENSOR FAIL
Sun 04-Aug-2019 16:14:30	MICU_06	Doe, Jane	9999999	System	10	NO SPO2 PROBE
Sun 04-Aug-2019 16:49:48	MICU_06	Doe, Jane	9999999	System	853	IP REMOVED
Sun 04-Aug-2019 17:00:23	MICU_06	Doe, Jane	9999999	System	128	NIBP MANUAL
Sun 04-Aug-2019 17:26:50	MICU_06	Doe, Jane	9999999	System	626	NO SPO2 PROBE
Sun 04-Aug-2019 17:31:49	MICU_06	Doe, Jane	9999999	System	360	CHECK NIBP
Sun 04-Aug-2019 18:02:05	MICU_06	Doe, Jane	9999999	System	390	CHECK NIBP
Sun 04-Aug-2019 18:10:13	MICU_06	Doe, Jane	9999999	System	249	CHECK NIBP
Sun 04-Aug-2019 18:15:19	MICU_06	Doe, Jane	9999999	System	92	CHECK NIBP
Sun 04-Aug-2019 20:00:23	MICU_06	Doe, Jane	9999999	System	30	NIBP MANUAL
Sun 04-Aug-2019 21:00:23	MICU_06	Doe, Jane	9999999	System	30	NIBP MANUAL
Sun 04-Aug-2019 21:32:03	MICU_06	Doe, Jane	9999999	System	154	CHECK NIBP
Mon 05-Aug-2019 00:02:04	MICU_06	Doe, Jane	9999999	System	50	CHECK NIBP
Mon 05-Aug-2019 00:04:55	MICU_06	Doe, Jane	9999999	System	48	CHECK NIBP
Mon 05-Aug-2019 01:04:18	MICU_06	Doe, Jane	9999999	System	26	CHECK NIBP
Mon 05-Aug-2019 01:09:01	MICU_06	Doe, Jane	9999999	System	6	CHECK NIBP
Mon 05-Aug-2019 01:34:10	MICU_06	Doe, Jane	9999999	System	8	CHECK NIBP
Mon 05-Aug-2019 01:35:58	MICU_06	Doe, Jane	9999999	System	54	CHECK NIBP

Warning	26	SPO2 LO 88
Warning	14	SPO2 LO 87
Warning	20	SPO2 LO 87
Warning	14	SPO2 LO 88
Warning	6	SPO2 LO 87
Warning	8	SPO2 LO 87
Warning	16	SPO2 LO 88
Warning	2	SPO2 LO 88
Warning	22	SPO2 LO 88
Warning	6	SPO2 LO 87
Warning	14	SPO2 LO 88
Warning	12	SPO2 LO 87
Warning	14	SPO2 LO 88
Warning	14	SPO2 LO 88
Warning	22	SPO2 LO 88
Warning	6	SPO2 LO 87
Warning	4	SPO2 LO 88
Warning	10	SPO2 LO 87
Warning	6	SPO2 LO 88
Warning	6	SPO2 LO 88
Warning	16	SPO2 LO 88
Warning	14	SPO2 LO 88
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Warning	30	SPO2 LO 88
Warning	2	SPO2 LO 88
Warning	2	SPO2 LO 87

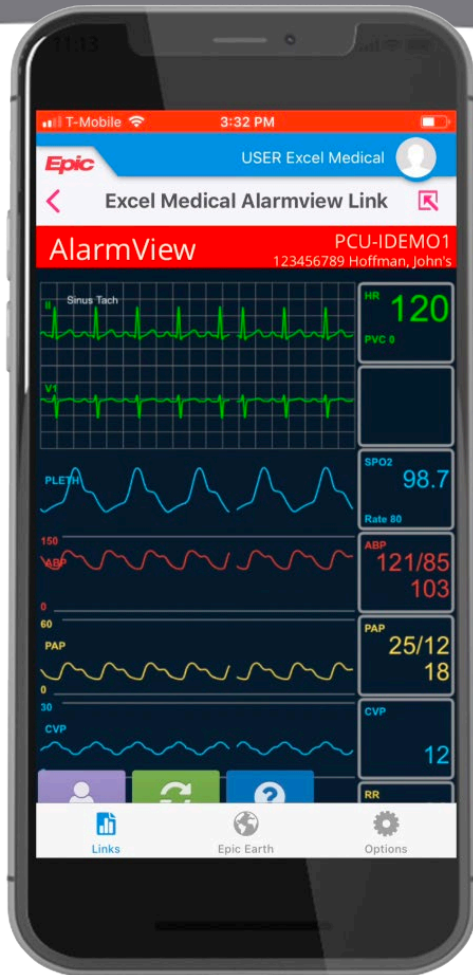
SpO2 Example

Future Ideas

- Condition-based alarm profiles
- Comfort care profiles
- System policy not conflicting with departmental level policies

Future Tools

- Excel Medical Wave Platform
- Alarm Notification Management – phone alarms, overhead alarms, etc.
- Infusion Pump Notifications to Phones



Excel Medical Haiku

Excel Medical Epic Integration



The screenshot displays the Epic Wave interface for a patient named Scott, Rick. The main content area shows a 'Cardiac Rhythm Report Summary - Hoffman, John's 123456789'. The report includes the following information:

- Monitor Admit Date: Wed Apr 10 08:34:47 - ReportID: 2244
- Status: Admitted
- Report Range: Wed, Apr 10, 2019, 8:34 to Fri, Apr 12, 2019, 12:00 (2 days, 3 hours, and 32 minutes)
- HR max: - HR min: -

The interface also features two charts:

- Vital Signs:** A line graph showing HR (red), SPO2 (green), and NBP (blue) over time from 16:00 on Apr 11 to 08:00 on Apr 12. The HR line shows significant fluctuations, with several peaks above 120 bpm.
- Alarms (798):** A bar chart showing the duration of various alarms over the same period. The legend indicates: Patient Crisis (107), Patient Warning (469), Patient Advisory (200), and System Warning (22).

The interface includes a sidebar with navigation options like 'Chart Review', 'Caret Everywhere...', 'Synopsis', 'Intake/Output', 'Notes', 'Manage Order...', and 'Navigators'. The top navigation bar includes 'WAVE', 'CARDIAC REPORTS', 'WAVEFORMS', 'ALARMS', and 'VISENSIA SAFETY INDEX'. The bottom of the window shows the user name 'BONNIE' and the copyright notice '© 2019 Epic Systems Corporation. Confidential. 6.14 P10'.

Excel Medical Epic Integration

Hygience - Epic 2018 - MATTHEWS, BONNIE

Epic

Scott, Rick

Need Integ: No
 Primary Probl: Community acquired pneumonia (Principal Hospital Problem)
 Allergies: Ace Inhibitors
 Code: FULL

Specialty Comments: This patient
 Admit Date: 06/05/2018
 Length of Stay (Days): 2

WAVE

CARDIAC REPORTS WAVEFORMS ALARMS VISENSIA SAFETY INDEX

TeleTrend

PCU-IDEMO1
 123456789 Hoffman, John's

HR 120
 PVC 0

SPO2 98.7
 Rate 80

ABP 121/85
 103

PAP 25/12
 18

CVP 12

RR 20

NBP 117/79 (58)
 PAWP 15

Logged in as administrator

Select Patient

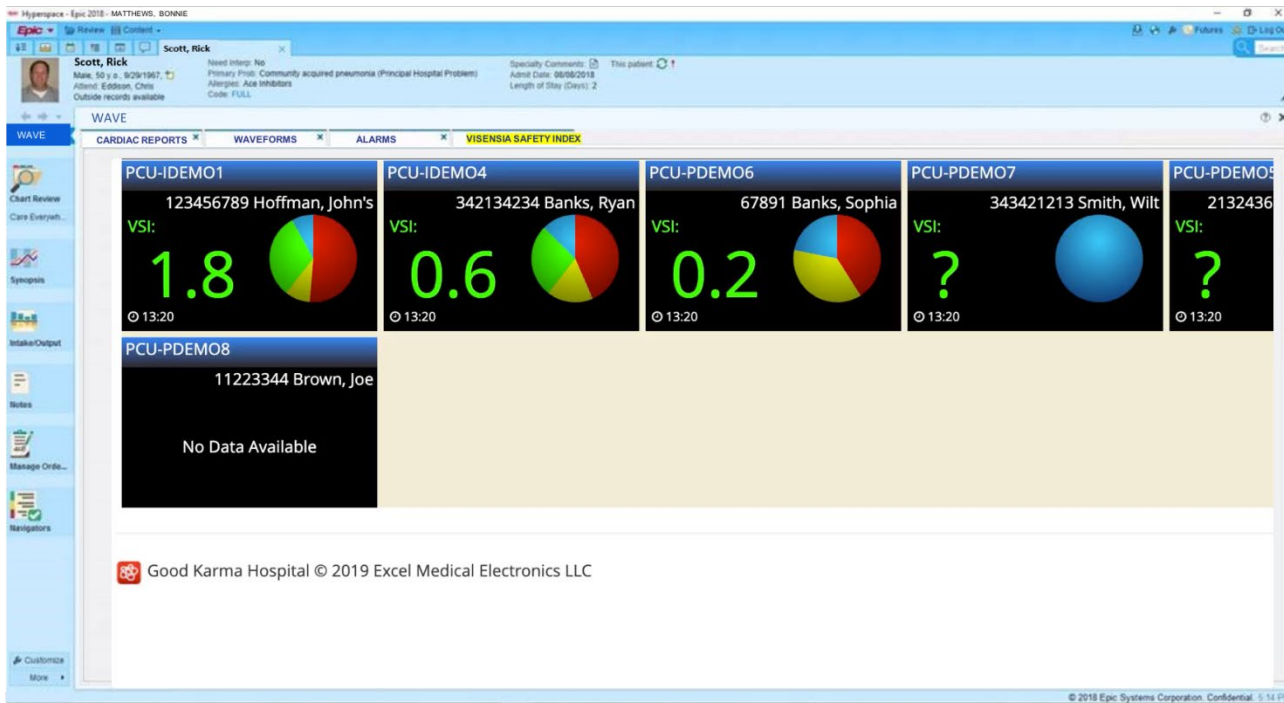
Unit-Bed	Name	Patient ID
CCU-12	TURNER, BOB	110110
CCU-BED01	SCOTT, RICK	865588
CCU-BED13		
PCU-IDEMO1	Hoffman, John's	123456789
PCU-IDEMO2	Banks, Tom	34567890
PCU-IDEMO3	Benson, Robert	123543
PCU-IDEMO4	Banks, Ryan	342134234
PCU-PDEMO5	Johnson, Catherine	2132436
PCU-PDEMO6	Banks, Sophia	67891
PCU-PDEMO7	Smith, Wilt	343421213
PCU-PDEMO8		11000011

OK

BONNIE

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Excel Medical Epic Integration



The screenshot displays the Epic VISENSIA SAFETY INDEX interface. At the top, the patient's name is Scott, Rick. Below this, the interface is divided into a grid of patient safety index (VSI) cards. Each card shows a patient ID, name, and a VSI score represented by a pie chart. The scores are 1.8, 0.6, 0.2, and two question marks. The bottom-left card for PCU-PDEMO8 shows 'No Data Available'.

PCU-IDEMO1	PCU-IDEMO4	PCU-PDEMO6	PCU-PDEMO7	PCU-PDEMO8
123456789 Hoffman, John's	342134234 Banks, Ryan	67891 Banks, Sophia	343421213 Smith, Wilt	2132436
VSI: 1.8	VSI: 0.6	VSI: 0.2	VSI: ?	VSI: ?
11223344 Brown, Joe	No Data Available			

Good Karma Hospital © 2019 Excel Medical Electronics LLC

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Excel Medical Epic Integration



The screenshot displays the Epic EMR interface. At the top, the patient's name 'Scott, Rick' is shown along with demographic and clinical information. Below this, the 'WAVE' section is active, showing a 'CARDIAC REPORTS' tab. A 'Cardiac Rhythm Report Summary - Banks, Sophia 67891' is displayed, featuring a 'Save Report' window with an ECG waveform. The main report area is titled 'EXCEL MEDICAL Shift Strip' and contains a detailed ECG tracing with various waveforms (ECG, P, QRS, T, ST, etc.) and associated vital signs. The interface includes a left-hand navigation pane with options like 'Chart Review', 'Synopsis', and 'Notes'. The bottom of the screen shows the Epic logo and copyright information: '© 2019 Epic Systems Corporation. Confidential. 6.14 PM'.

Hygenpace - Epic 2019 - MATTHEWS, BONNIE

Scott, Rick
Male, 50 y.o. 929-1967
Allergy: Edibles, Chns
Outside records available

Need Intrg: No
Primary Probl: Community acquired pneumonia (Principal Hospital Problem)
Allergies: Aa: Sulfites
Code: FULL

Specialty Comments: This patient
Admit Date: 06/05/2018
Length of Stay (Days): 2

WAVE

CARDIAC REPORTS WAVEFORMS ALARMS VISENSIA SAFETY INDEX

Summary Strip Saved Strips (0) Alarms (1710) Vital Signs

Cardiac Rhythm Report Summary - Banks, Sophia 67891

Save Report

Insert Text

EXCEL MEDICAL Shift Strip

Wed Apr 10, 2019 11:35:08
HR: 65, P/VC: 0, SpO2: 96.7, ABP: 81 / 22 (SD), PAP: 25 / 18 (L4), CVP: 120
QRS: RR: 1.09/sec QT: QTc:
Rhythm:
Comments: nil
Last Edited by: Viree Deak
Recorded by: Viree Deak

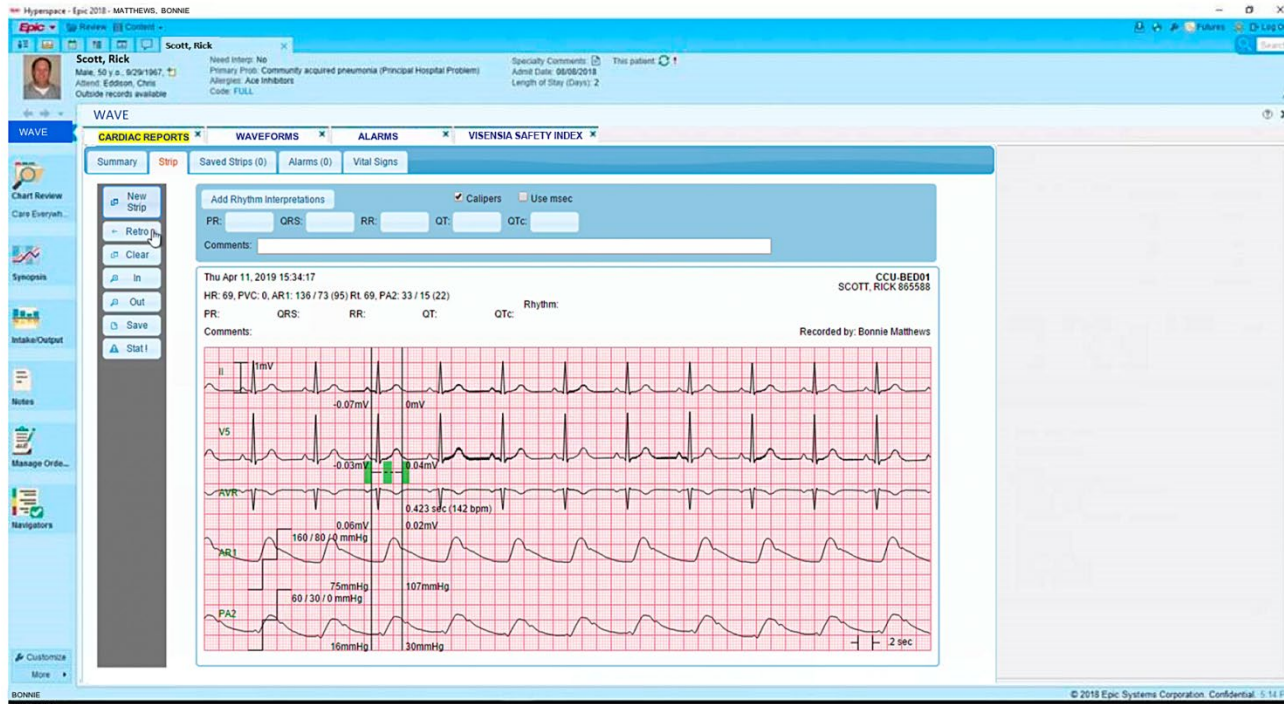
ECG
V1
V4-12
ABP: 150 / 75 / 0 mmHg
PAP: 25 / 18 / 0 mmHg
CVP: 20 / 15 / 0 mmHg
RESP

Send to EMR Close

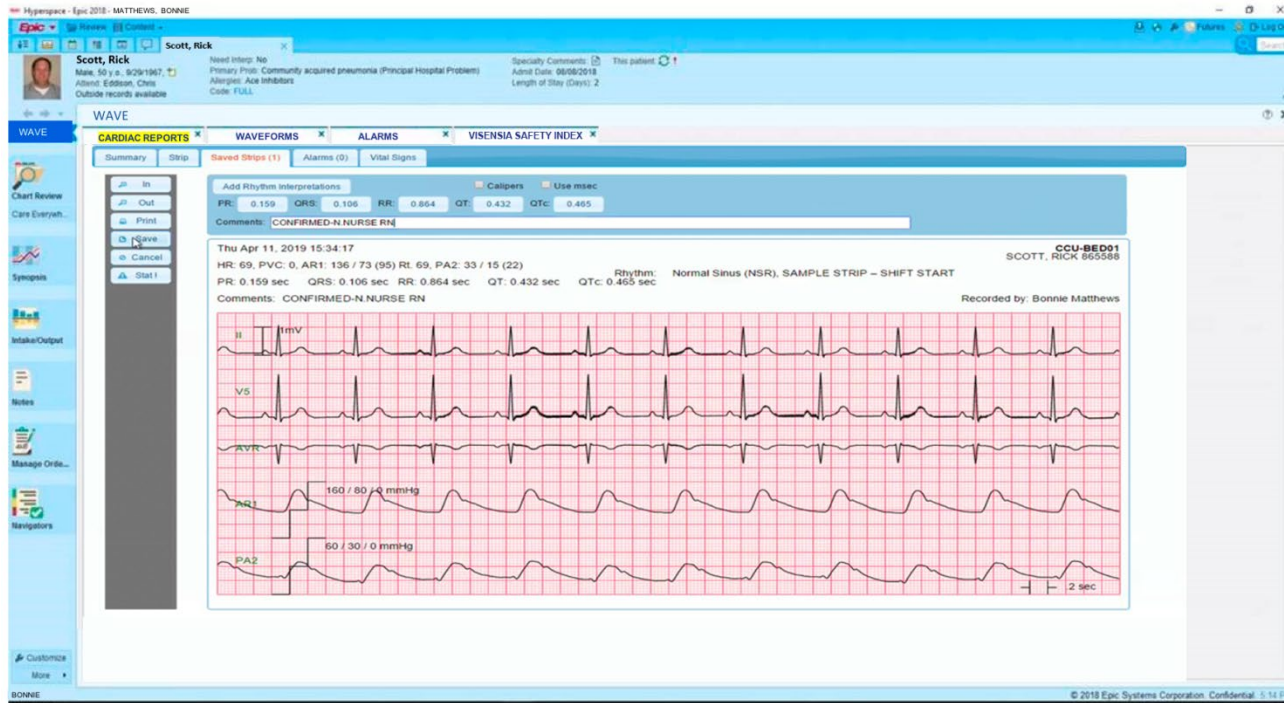
BONNIE MATTHEWS

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Excel Medical Epic Integration



Excel Medical Epic Integration



Alarm Notification Management

- Connexall
- Spok
- Vocera
- NEC
- Excel Medical

Infusion Pump Notification

- Notifications to phones of issues
- Reduces time for alarm to sound for clinician to respond
- Patient satisfier

What Questions Do You Have?