

# Alarm Management:

## From Confusion, to Information, to Wisdom

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NCH Healthcare System, Naples FL

# NCH Healthcare System

Non-for-profit, multi-facility healthcare system in Naples, Florida



- 2 hospitals (716 beds)
- An alliance of 650 physicians and medical facilities throughout Collier County and Southwest Florida
- Extensive inpatient and outpatient services
- In 2014, the system had 36,386 admissions, 93,634 ED visits, 3,418 births, 453 open heart surgeries, 11,688 surgical procedures and over 3,900 on staff

# Objectives

- Prepare to meet the regulatory requirements for alarm management and patient safety
- Discuss NCH's journey with technology and data to drive alarm management
- Learn how NCH drives pertinent data to minimize alarm fatigue and improve clinician awareness of patient specific alarm limits

# We had a problem....

It's called alarm fatigue.

Alarm fatigue occurs when staff become desensitized to alarms, leading to missed true events and/or delayed response.



# We had a problem.....

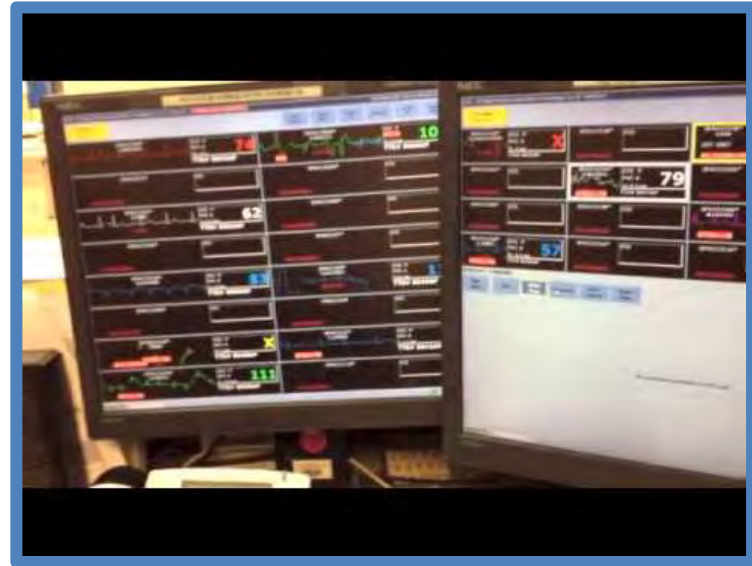
In January 2015, our unit had 255,656 total telemetry alarms on our patients.

We needed a way to decrease false alarms, so that real alarms weren't missed.



# So . . .we began changing our practice

- We began changing our electrodes on a daily basis
- We started adjusting our telemetry alarm parameters to individual patient need



# So . . . After we changed our practice

- Now, when a telemetry alarm goes off, it is more likely to be a “real” event. Nurses are responding accordingly and checking on alarms as they occur.
- Nurses are expressing a greater awareness of their patients’ overall clinical conditions.

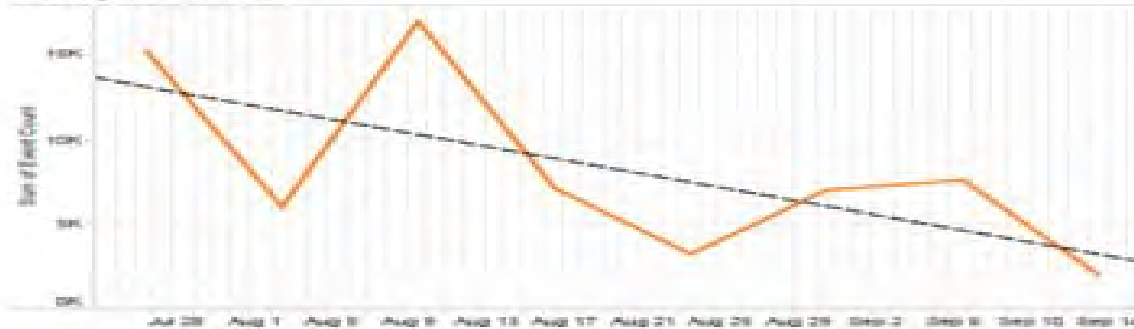


How did we get this far ...

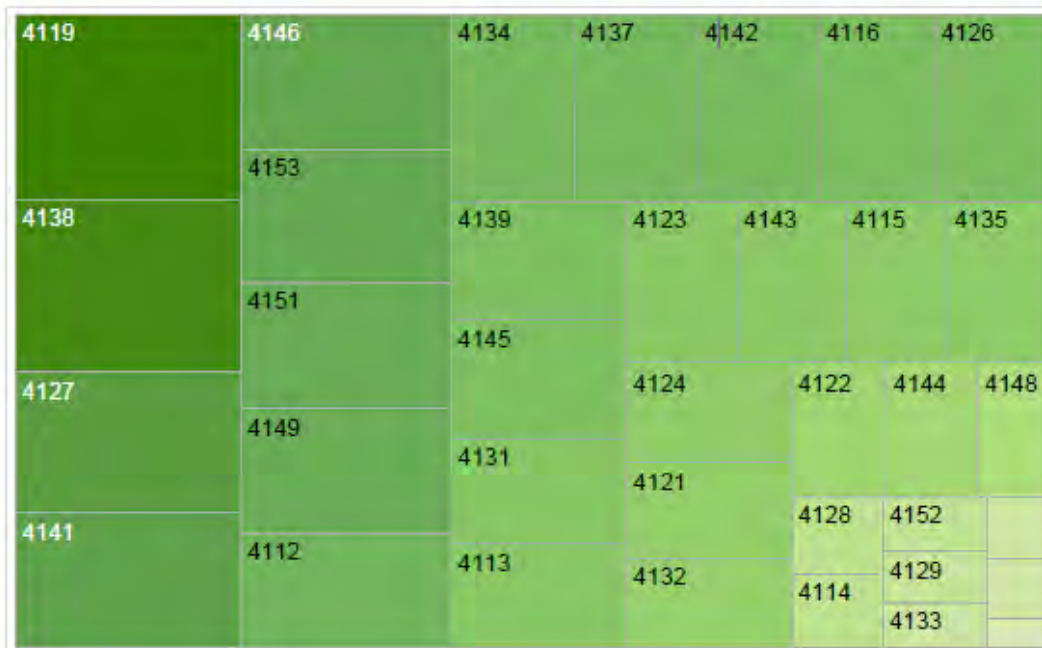


# The impact of intervention

Weekly Trend Total



During the last week of August, we began the daily electrode change process.



We also evaluated “hot spots” to assess alarm activity at the bed level.



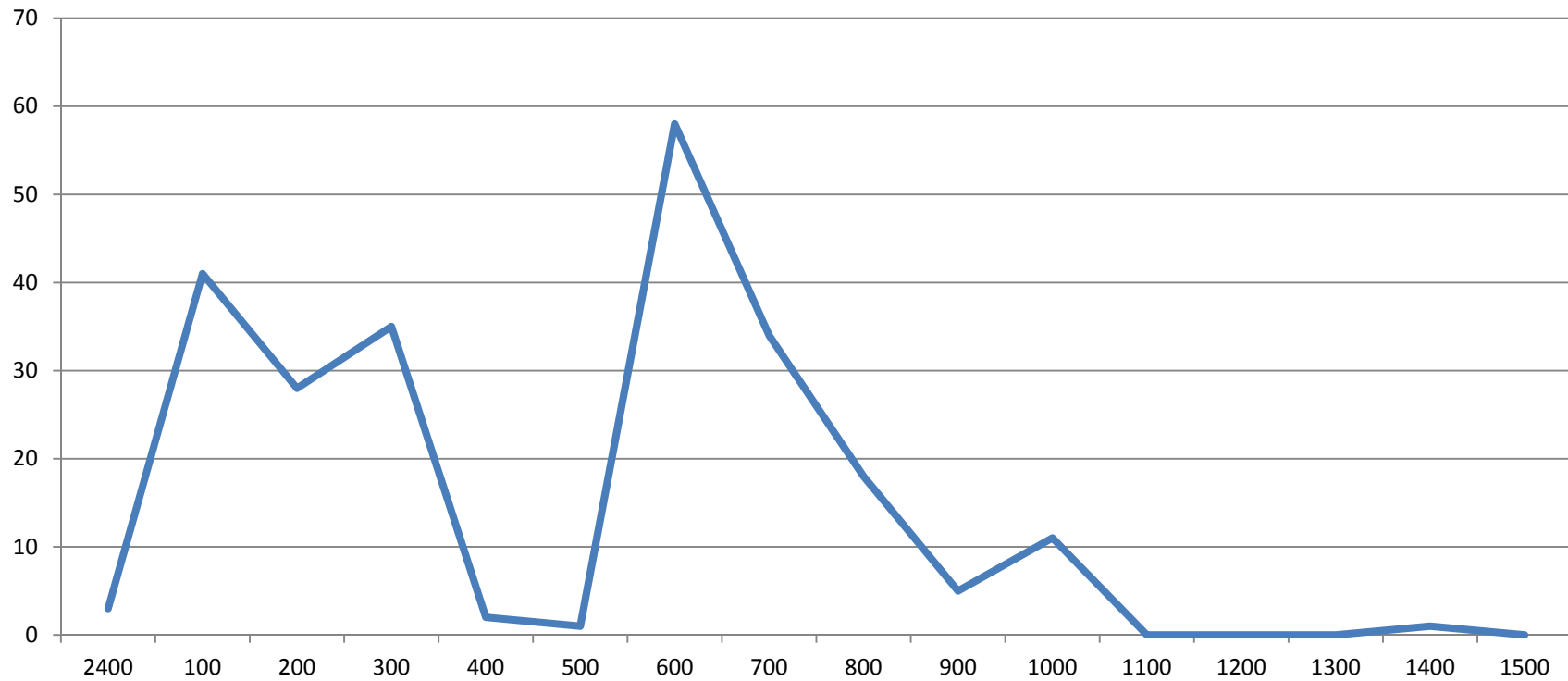
# What can I do with the data ?

- Hospital
- Defined time frame
- Particular Unit
- Bed assignment
- Track telemetry pack assignment
- Hourly analysis
- On the spot staff education
- Endless possibilities – a new data frontier



# October 2014 – managing the monitor

# Tachy Alarms



# March 2015 – evaluated the shift report

## Shift Reports - Initial Alarms

Date Range: All to next 24 hours.

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Last Run: 3/6/2015 7:30:05 PM

Room	Event Type	Date		03/05/2015							03/06/2015														Sum	%			
		Hour	Hour	18	19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14			15	16	17
4146	HEART_RATE_HIGH	26	20	46	2	-	-	-	-	6	-	3	4	4	-	13	10	-	-	-	1	6	8	-	3	30	182	40.81	
	NO_TELEM	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	19	6	31	6.95	
	PVC_HI	-	-	-	-	-	-	-	-	-	-	-	2	3	4	12	14	-	-	-	3	6	-	1	1	5	51	11.43	
	SILENCE	-	-	1	-	2	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	-	-	1	1	2	11	2.47	
	TACHY	25	-	43	-	-	-	1	-	2	-	2	5	5	-	16	13	-	-	-	1	6	9	-	2	27	157	35.2	
	UNSILENCE	1	-	1	-	2	-	-	-	-	-	-	-	-	-	3	1	-	-	-	-	-	-	-	1	1	2	12	2.69
	V_TACH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0.22
	VT_HIGH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0.22
4147	ACCELERATED_VENT	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	0.04	
	HEART_RATE_HIGH	-	-	55	170	103	57	7	23	20	33	29	31	29	32	55	13	33	117	135	149	73	13	2	10	19	1,208	21.85	
	NO_TELEM	-	-	1	-	-	-	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	13	9	27	0.49	
	PVC_HI	-	3	72	236	137	95	34	57	67	76	76	79	105	59	96	51	72	231	253	246	140	57	35	47	47	2,371	42.88	
	SILENCE	-	-	-	6	1	-	-	-	-	-	12	-	4	1	5	1	1	1	1	1	2	1	3	1	4	45	0.81	
	TACHY	-	-	59	180	120	70	15	47	50	50	81	77	67	42	71	27	64	187	192	198	105	19	4	23	34	1,782	32.23	
	UNSILENCE	-	-	-	6	1	-	-	-	-	-	12	-	3	1	5	1	1	2	1	1	2	1	3	1	4	45	0.81	
	V_TACH	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	3	0.05	
VT_HIGH	-	-	1	4	5	-	-	-	-	1	-	1	-	1	1	4	-	3	2	6	5	4	2	2	4	46	0.83		

# April 2015 – report to charge nurses

## Shift Reports - Initial Alarms

Date Range: All to next 24 hours.

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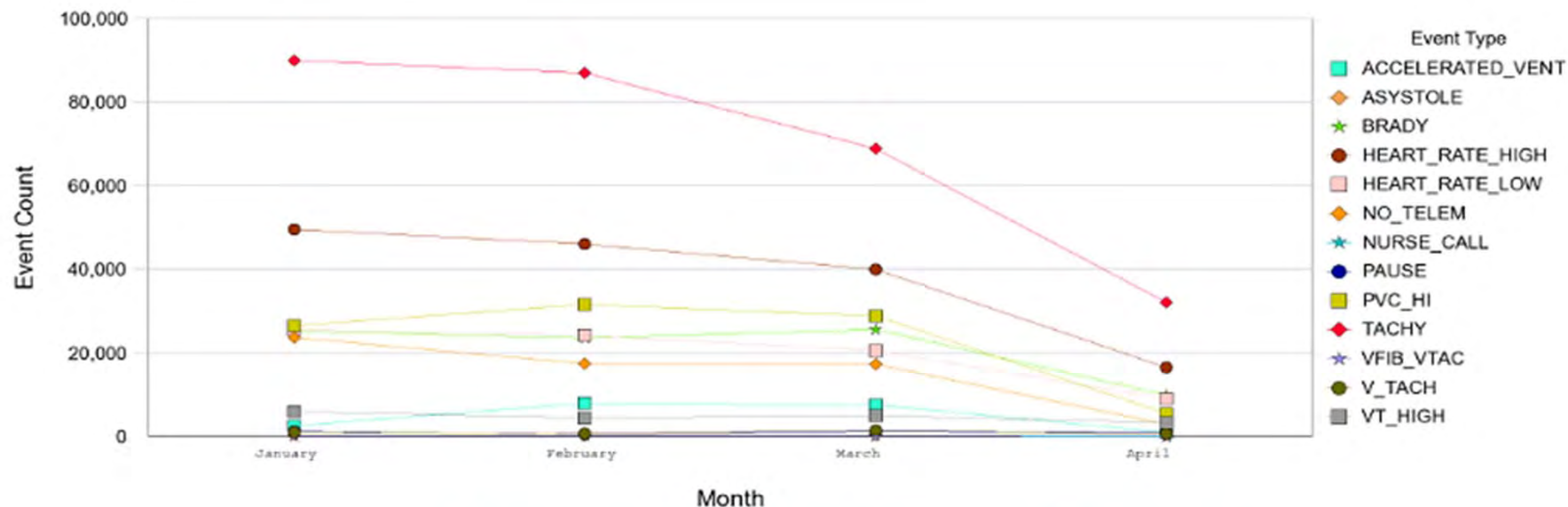
Last Run: 4/23/2015 8:30:01 PM

Date		04/22/2015					04/23/2015																			Sum	%			
Hour		19	20	21	22	23	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19				
Room	Event Type																													
4131	BRADY	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3.85	
	HEART_RATE_HIGH	-	-	-	-	-	-	-	-	-	-	-	-	3	1	-	1	5	-	-	-	-	-	-	-	-	-	10	38.46	
	NO_TELEM	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	8	30.77	
	TACHY	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	3	-	-	-	-	-	-	-	-	-	5	19.23	
	V_TACH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	3.85	
	VT_HIGH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	3.85	
4132	HEART_RATE_HIGH	3	6	4	28	6	-	-	10	1	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	61	53.98	
	TACHY	2	1	4	23	12	-	-	5	2	-	-	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	52	46.02	
4133	BRADY	-	-	-	1	8	1	1	-	4	2	3	6	-	-	-	-	-	-	-	-	-	-	-	78	38	4	-	146	59.84
	HEART_RATE_HIGH	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	0.41	
	HEART_RATE_LOW	-	-	-	2	2	1	-	-	2	1	3	4	-	-	-	-	-	-	-	-	-	-	49	24	5	-	93	38.11	
	NO_TELEM	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	0.41	
	TACHY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	2	0.82	
	VT_HIGH	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0.41	
4134	BRADY	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	14.29	
	HEART_RATE_LOW	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	28.57	
	VT_HIGH	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	1	4	57.14

*“Now that we’re able to read information and use it daily, I think it’s improved patient care dramatically...we’re going to take that data and bring it down to the specific room, to the specific hour, to the specific patient, so we can monitor those alerts that are coming through.”*

— Kevin Smith, BSN, RN at NCH Healthcare System

## M/S 4 East



	January	February	March	April
ACCELERATED_VENT	2,494	8,023	7,633	983
ASYSTOLE	334	256	363	350
BRADY	25,159	23,590	25,557	9,982
HEART_RATE_HIGH	49,531	46,118	39,933	16,606
HEART_RATE_LOW	25,665	24,238	20,539	9,037
NO_TELEM	23,708	17,425	17,280	2,998
NURSE_CALL	157	120	125	112
PAUSE	1,221	584	1,263	1,021
PVC_HI	26,453	31,599	28,896	5,547
TACHY	90,038	86,994	68,926	32,059
VFIB_VTAC	44	79	32	25
V_TACH	1,108	771	1,463	765



Questions?