AAMI 2016
Conference & Expo
June 3–6, Tampa, FL

The premier industry event for healthcare technology management professionals

HTF Update:
2016 National Clinical Alarm Survey Results

SUNDAY, JUNE 5: 10:30 a.m. – 11:00 a.m

Tobey Clark
Director, ITS/University of Vermont &
Healthcare Technology Foundation (HTF) Clinical Alarms Task Force

Healthcare Technology Foundation

Mission:

- *"Improve healthcare delivery outcomes by promoting the development, application and support of safe and effective healthcare technologies.“*

Major initiatives:

- Public Awareness and Education on Technology Safety
- Managing Risks of Integrated Systems
- Clinical Alarms Management and Integration (2005)
  - *“To improve patient safety by identifying issues and opportunities for enhancements in clinical alarm design, operation, responses, communication, and appropriate actions to resolve alarm-related events.”*
  - Actively collaborate with AAMI

HTF website: http://www.thehtf.org/

HTF Healthcare Technology FOUNDATION

HTF Clinical Alarms Task Force

- Chair: Izabella Gieras, Huntington Hospital
  - Marge Funk, Yadin David, Jennifer Ott. Thomas Bauld, Karen Giuliano, Paul Coss, Marcia Wylie, and Tobey Clark
- Projects
  - Patient brochure
    - Alarms 101
  - 2016 Clinical Alarms National Survey
    - Completed May 15, 2916
  - Survey on Alarms in the Home (future)

Healthcare Technology Patient Safety Resource Center

Focus on critical equipment

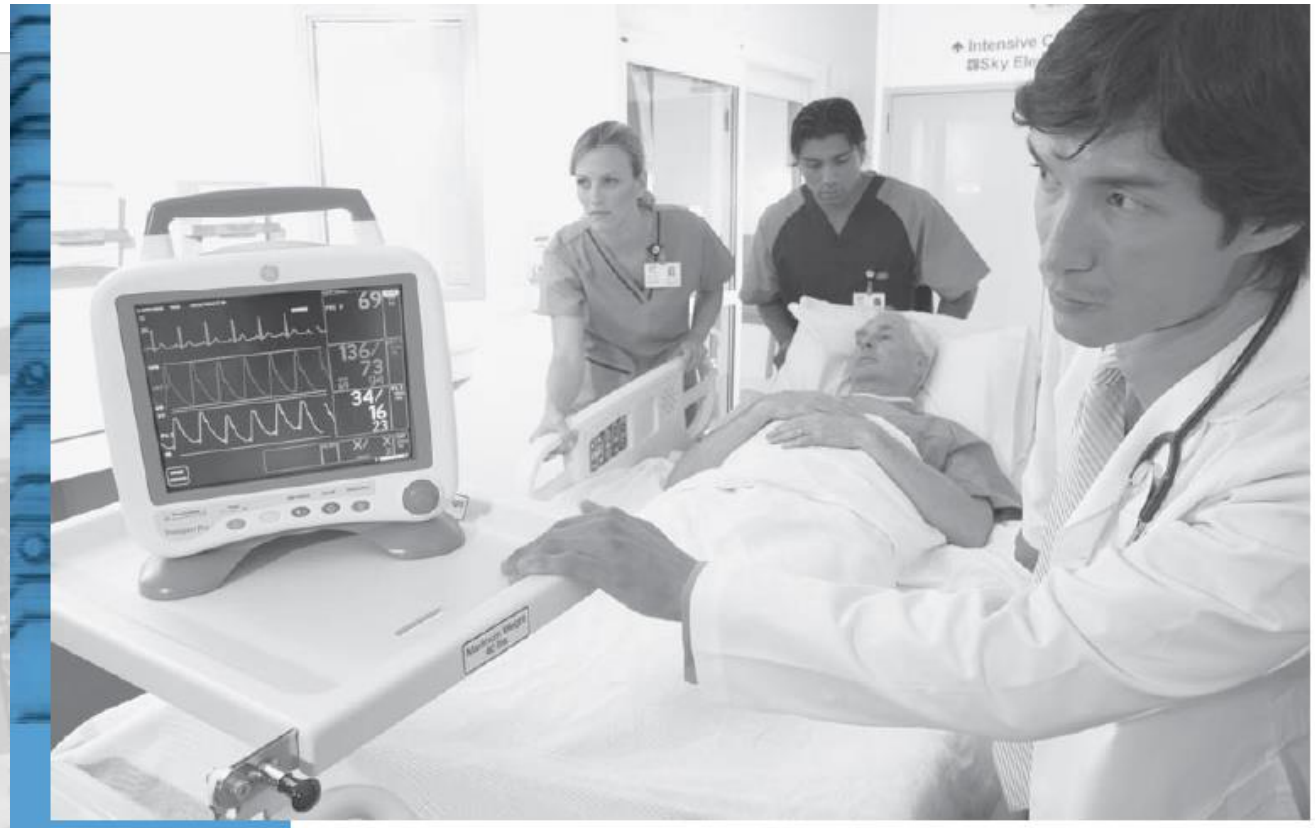
Latest Brochure: *Guide to Understanding Clinical Alarms*

- A Guide for Patients and Their Families to Help Them Understand Clinical Alarms
  - What to expect
- Type of Alarms
- Why do these alarms sound?
  - Is something wrong?
- Impact of Clinical Alarms on Patients and Families
- Role of the patients and visitors when clinical alarms sound
- Background and links to HTF and AAMI

NATIONAL CLINICAL ALARMS SURVEYS – 2006, 2011 & 2016

HTF Healthcare Technology FOUNDATION

Healthcare Technology Foundation
Clinical Alarm Initiative 2006 Key Deliverable



Impact of Clinical Alarms on Patient Safety

Numerous citations of HTF White Paper which Includes 2006 National Clinical Alarms Survey Results

2011 National Clinical Alarms Survey

- Re-survey of the field
- Sponsorship – **AAMI, ACCE, PHILIPS & HTF**
- Response:

  4278 responders – 93% clinical staff

- Reported on the results at the AAMI Medical Device Alarms Summit

2016 National Clinical Alarms Survey

Motivation

- Assess the impact of the Joint Commission NPSG and other initiatives
- Five year cycle

Survey

- Keep current key questions to allow comparison
  - *Streamline through question deletion, e.g. rating*
  - *Focused comment feedback*
- Add new, relevant questions including NPSG related
- 29 questions with a comment box at the end of each section below:
  - *Nuisance Alarms*
  - *Experience with Alarm Systems*
  - *Alarm Notification*
  - *Smart Alarms*
  - *Institutional Requirements*
  - *Clinical Alarms Management Improvements*
  - *Adverse Events & TJC NPSG*
- Voluntary and Anonymous
- Survey leader – Marge Funk, PhD, RN

Sponsor and Collaborative Organizations

Primary Sponsor

Thank you!

COLLABORATIVE ORGANIZATIONS

- AAMI – Association for the Advancement of Medical Instrumentation
- ACCE - American College of Clinical Engineering
- AACN – Amer. Assoc. of Critical-care Nurses
- NACNS – National Assoc. of Clinical Nurse Specialists
- AARC – American Association of Respiratory Care
- ECRI – Emergency Care Research Institute
- ASHE – American Society of Healthcare Engineering
- 24x7 Magazine – Allied 360
- Local and regional HTM societies

2016 SURVEY RESULTS

HTF Healthcare Technology FOUNDATION

HTF Survey Comparison: *Changing Demographics*

Demographics	2006	2011	2016
Responders	1327	4287	1241
DEPARTMENT			
ICU	31%	37%	40%
Respiratory	NA	16%	26%
Progressive Care (/Telemetry Unit added 2016)	5%	5%	11%
General Floor	11%	12%	2%
Support Services (HTM, risk management, facilities)	12%	16%	8%
JOB TITLE			
Registered Nurses (RN) *	51%	33%	54%
Respiratory Therapists (RT)	14%	51%	30%
Clinical Engineer/Biomedical Equipment Technician	15%	5%	4%

* ***Other*** category – 47 Clinical Nurse Specialists

Specific question added in 2016 survey to ask if responder was a Manager – *69% stated Yes*

HTF Survey Comparison Agree/Strongly Agree

Question	2006	2011	2016
NUISANCE ALARMS			
Nuisance alarms occur frequently	81%	76%	87%
Nuisance alarms disrupt patient care	77%	71%	86%
Nuisance alarms reduce trust in alarms and cause care givers to inappropriately turn alarms off at times other than during setup or procedures	78%	78%	83%
EXPERIENCE WITH ALARM SYSTEMS			
Properly setting alarm parameters and alerts is overly complex in existing device	28%	21%	28%
Newer monitoring systems have solved most of the previous problems we experienced with clinical alarms	31%	29%	17%
Alarms are adequate to alert staff of potential or actual changes in a patient's condition	72%	72%	72%
There have been frequent instances where alarms could not be heard and were missed	30%	29%	34%
Clinical staff is sensitive to alarms and responds quickly	63%	66%	49%

HTF Survey Comparison Agree/Strongly Agree

Question	2006	2011	2016
EXPERIENCE WITH ALARM SYSTEMS (CONTINUED)			
When a number of devices are used with a patient, it can be confusing to determine which device is in an alarm condition	51%	51%	53%
Background noise has interfered with alarm recognition	43%	42%	51%
ALARM NOTIFICATION			
Does your hospital use alarm notification systems such as pagers, cell phones, or other wireless devices to communicate alarm conditions?	NA	NA	37% (Y/N)
Alarm integration and communication systems are useful for improving alarms management and response	54%	56%	48%
Does your institution utilize "monitor watchers" in a central viewing area to observe and communicate alarm conditions to caregivers?	NA	47% (Y/N)	48% (Y/N)
Central alarm management staff responsible for receiving alarm messages and alerting appropriate staff is helpful	49%	53%	53%

HTF Survey Comparison Agree/Strongly Agree

Question	2006	2011	2016
SMART ALARMS			
Does your institution use systems that employ smart alarms (e.g., where multiple parameters, rate of change of parameters, and signal quality, are automatically assessed in their entirety)?	NA	NA	19% (Y/N)
Smart alarms would be effective to use for reducing false alarms	80%	78%	65%
Smart alarms would be effective to use for improving clinical response to important patient alarms	80%	78%	69%
INSTITUTIONAL REQUIREMENTS			
If you are responsible for clinical alarms, have you been educated on the purpose and proper operation of alarm systems?	NA	NA	86% (Y/N)
Is there a requirement in your institution to document that the alarms are set and are appropriate for each patient?	76%	71%	68% (Y/N)
Clinical policies and procedures regarding alarm management are effectively used in my facility	66%	55%	50%

2016 HTF Survey
Yes/No Answers

Question	2006	2011	2016
CLINICAL ALARM MGT IMPROVEMENTS			
Has your institution developed clinical alarm improvement initiatives over the past two years?	NA	53%	62%
Has your healthcare institution instituted new technological solutions to improve clinical alarm safety?	NA	19%	42%

2016 HTF Survey
Joint Commission NPSG

STATEMENT: The Joint Commission's National Patient Safety Goal on Alarm Management that became effective in 2014 has reduced adverse patient events.

Strongly agree	4.0%
Agree	28.3%
Neutral	55.2%
Disagree	10.3%
Strongly disagree	2.3%

Comments: TJC NPSG

- The NPSG has definitely brought this topic to the forefront in quality discussions. In that regard, it makes the clinician more aware of clinical alarms. (Clinical Nurse Specialist)
- I think the NPSG will reduce adverse patient events at our organization. We are just not there yet. We are still working on fully implementing the goal. (RN)
- More people are aware of the Patient Safety Goals but I have not seen actual data that has measured the effectiveness of such goals. (RT)
- Unable to assess if this has made difference yet. (RT)

HTF Survey
Adverse Events 2011 & 2016

STATEMENT:
Has your institution experienced adverse patient events in the last two years related to clinical alarm problems?

Year	Yes	No	Not Sure
2011	18%	33%	49%
2016	30%	29%	41%

Comments: Adverse Events

- Alarm fatigue is leading to significant incidents because there are so many nuisance alarms and no one even looks up when a high-priority alarm sounds. Failure to rescue should be a never event but it isn't. (RN)
- It's hard to track which adverse events are definitely alarm related. Some are clear cut, sometimes a missed or silenced alarm is just a contributing factor. If anyone is tracking this well it would be very helpful to have details on how they are doing this. (RN)
- …alarm related adverse event may be obscured and may not be apparent until we do root cause analysis. (RN)
- We had a deaths from missed alarms. We instituted new monitors, non-invasive ventilators and also new alarm management practices and still since then we have had another death despite this and 2 more near misses. The new non-invasive vent that we bought to replace the old ones is worse and keeps alarming so it actually contributed to the second death. (RN)

Comments: General

- The advancement of alarm management and the newer monitoring devices has definitely helped the patient care experience. The problem I see is that clinical staff could use a definite education course in how to set their alarms, and what they should be looking for when setting them. (RN)
- The monitoring and attention to alarms has increased, but I think this has only increased alarm fatigue. Many ICU nurses, although they should be readjusting and checking their bedside alarms at the start of the shift, do not. If they would only make parameter adjustments, the alarms would be better suited to actually detect problems and we wouldn't be as (?) with the alarms. (RN)
- Too many nuisance alarms, too many patients inappropriately monitored. Continuous pulse oximetry is way overused and accounts for most of the alarms. Having everyone's phone ring to one patient's alarm makes you not respond to them most of the time. (RN)

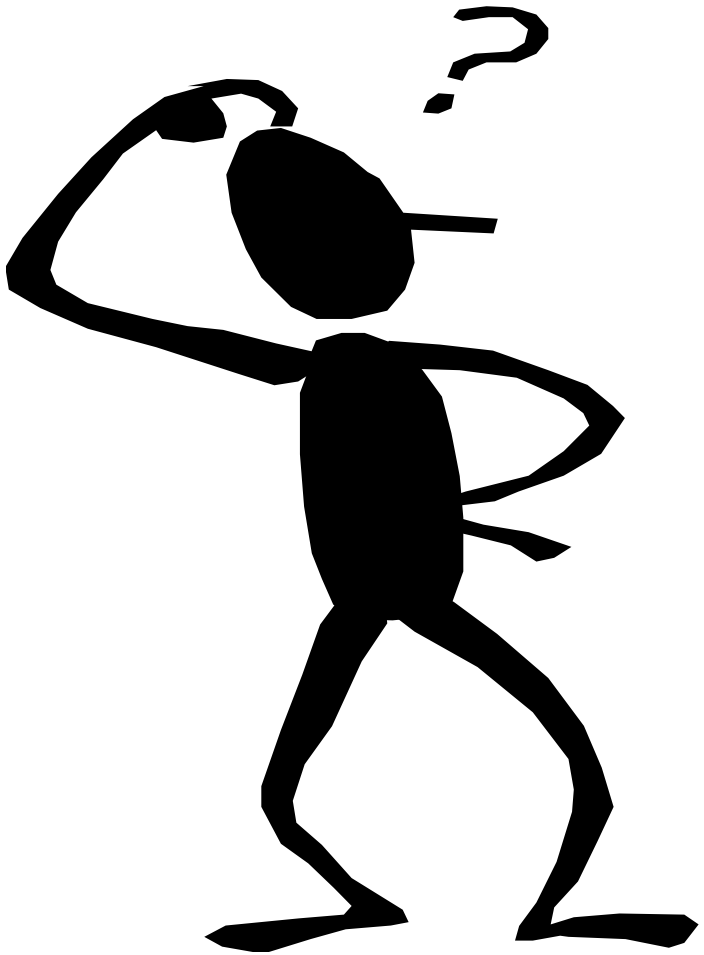
Comments: General

- Not enough experienced staff to orient new staff, new staff to realize the alarms, settings and need for watching them IS their job and the outcomes DO affect the pt. New graduates are pushed by the AACN to get into ICU/CCU's. BUT the double edge sword is you need experienced staff to train them. (RN)
- I think we would be better served by actually educating RNs and others how to optimize signals, how often to change lead patches, proper skin prep, & customization of alarms to the individual patient. (RN)
- It still takes a human to address the alarm, then utilize critical clinical thinking skills to identify and eliminate all possible causes of said alarm, then apply the appropriate remedy, all while ensuring that the patient does not suffer any further risk or harm.(RT)
- Remember, a monitor is a tool to help you work smarter not harder. It is not diagnostic! (RN)

Summary & Preliminary Comments

- Overall, “grading” slightly lower
  - Change in demographics
  - Significantly greater awareness
    - TJC NPSG, AAMI, HTF, societies, other sources
    - Nuisance alarms, technological limitations, alarm fatigue, and terms such as alarm integration systems, smart alarms, etc.
  - Increased use of technology to improve alarms
  - National Patient Safety Goal realization
    - Approximately 1/3 agree there has been a reduction in adverse events
    - From comments: Some hospitals still implementing, impact on outcomes incomplete
  - Large percentage trained but is it thorough enough?
  - Staffing concerns including impact of training new staff
- Further assessment needed
  - Look at RN and RT job titles separately
  - Evaluate comments
  - TBD

Thank you!



Questions?

Tobey.clark@uvm.edu