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Safe opioid use – Strategies for reducing adverse events and related harm

March 4, 2014

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Faculty

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First National Patient-Controlled Analgesia Survey of Hospital Practices: The Results

Michael Wong, JD
Founder/Executive Director
Physician-Patient Alliance for Health & Safety

Physician-Patient Alliance for Health & Safety

Promise to Amanda
A FOUNDATION FOCUSED ON MONITORING CO2
"CAPNOGRAPHY SAVES LIVES"

Agenda

1. Impetus for the survey
2. Survey methodology & respondents
3. Statistical analysis
4. Result yardstick
5. Major conclusions:

   (i) Inconsistent Consideration of Patient Risk Factors increases patients overall risks

   (ii) Inconsistent double checks puts patients at risk

   (iii) Reducing alarm fatigue may increase use of patient monitoring

   (iv) Continuous electronic monitoring reduces adverse events and hospital expenditures

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Impetus for the Survey

More than 13 million patients each year receive PCA in US

↓

0.16 to 5.2%
suffer respiratory depression (est.)

↓

Between 20,800 to 676,000 PCA patients will experience opioid-induced respiratory depression

Robert Stoelting, MD
(President, Anesthesia Patient Safety Foundation) presentation,
Patient, Safety Science & Technology Summit (January 2013)

Impetus for the Survey

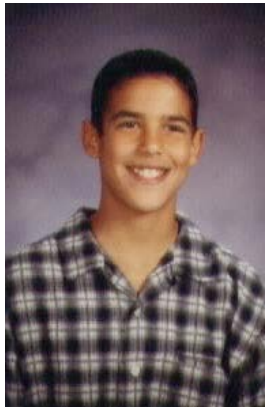
Amanda Abbiehl
18-year old, admitted for "severe strep throat"
unmonitored use of PCA
http://promisetoamanda.org/?page_id=32

Robert Goode
unmonitored use of PCA after hiatal hernia surgery
http://community.advanceweb.com/blogs/nurses3/archive/2013/07/03/nursing-spot-checks-for-patient-safety-a-nurse-s-perspective.aspx

Louise Batz
unmonitored use of PCA after knee replacement surgery
http://ppahs.org/2012/01/13/guest-post-monitoring-can-prevent-errors-with-patient-controlled-analgesia/

Leah Coufal
unmonitored epidural anesthesia after surgery for pectus carinatum
http://ppahs.org/2012/02/01/guest-post-yes-real-time-monitoring-would-have-saved-leah-2/

Tyler Ireland
unmonitored PCA after surgery for collapsed lung



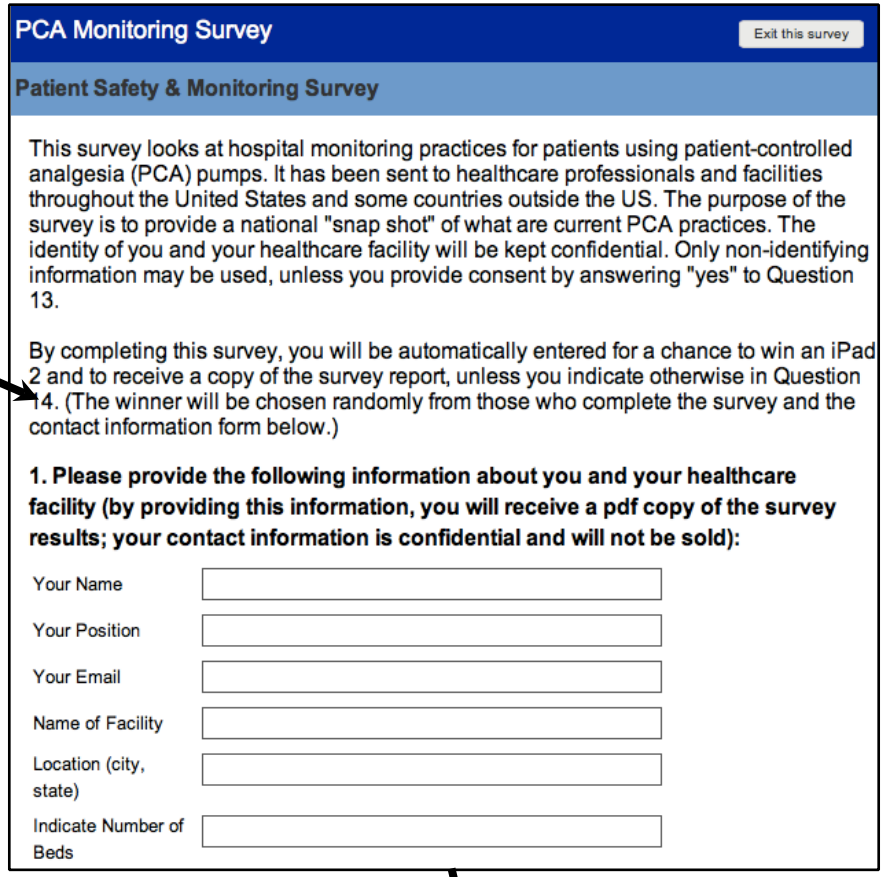
Justin Micalizzi
unmonitored PCA after surgery to incise and drain a swollen ankle
http://ppahs.org/2011/08/18/would-monitoring-have-saved-justin-micalizzi/

Survey Methodology & Respondents

Online survey developed & sent out

Survey developed with input from:

- **Corey Angst, PhD, MBA** (Asst Prof, Dept of Mgmt, Mendoza College of Business, U of Notre Dame)
- **Richard Dutton, MD, MBA** (Exec Director, Anesthesia Quality Institute)
- **Frank Federico, RPh** (Exec Director, IHI, and Patient Safety Advisory Group of TJC)
- **Matthew Grissinger** (Dir, Error Reporting , ISMP)
- **Stephen Howell, MSN** (Lead Nurse Practitioner, University of Alabama School of Medicine)
- **Ken Kelley, PhD, MA** (Viola D. Hank Assoc Prof of Mgmt, Mendoza Coll of Business, U of Notre Dame)
- **Joe Kiani,** MSEE (CEO, Masimo)
- **Carter King, MBA** (VP, Business Operations, AcelRx)
- **Mary Lynn McPherson** (Professor, University of MD School of Pharmacy)
- **John Tucker, MBA** (Chief Commercial Officer, Incline Therapeutics)
- **Rodney Tucker, MD, MMM** (Assoc Prof, U of AL)
- **Greg Spratt, RRT, CPFT** (Dir of Clinical Marketing, Covidien)
- **Tim Vanderveen, PharmD, MS** (VP, Center for Safety and Clinical Excellence, CareFusion)



PCA Monitoring Survey

Exit this survey

Patient Safety & Monitoring Survey

This survey looks at hospital monitoring practices for patients using patient-controlled analgesia (PCA) pumps. It has been sent to healthcare professionals and facilities throughout the United States and some countries outside the US. The purpose of the survey is to provide a national "snap shot" of what are current PCA practices. The identity of you and your healthcare facility will be kept confidential. Only non-identifying information may be used, unless you provide consent by answering "yes" to Question 13.

By completing this survey, you will be automatically entered for a chance to win an iPad 2 and to receive a copy of the survey report, unless you indicate otherwise in Question 14. (The winner will be chosen randomly from those who complete the survey and the contact information form below.)

1. Please provide the following information about you and your healthcare facility (by providing this information, you will receive a pdf copy of the survey results; your contact information is confidential and will not be sold):

Your Name

Your Position

Your Email

Name of Facility

Location (city, state)

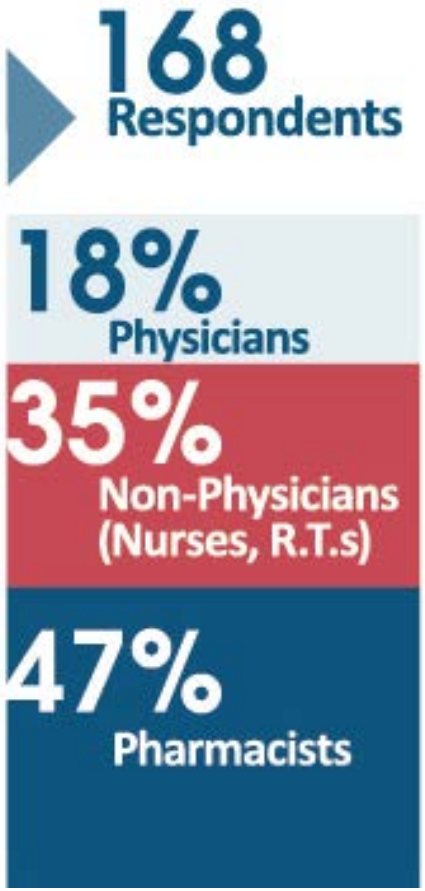
Indicate Number of Beds

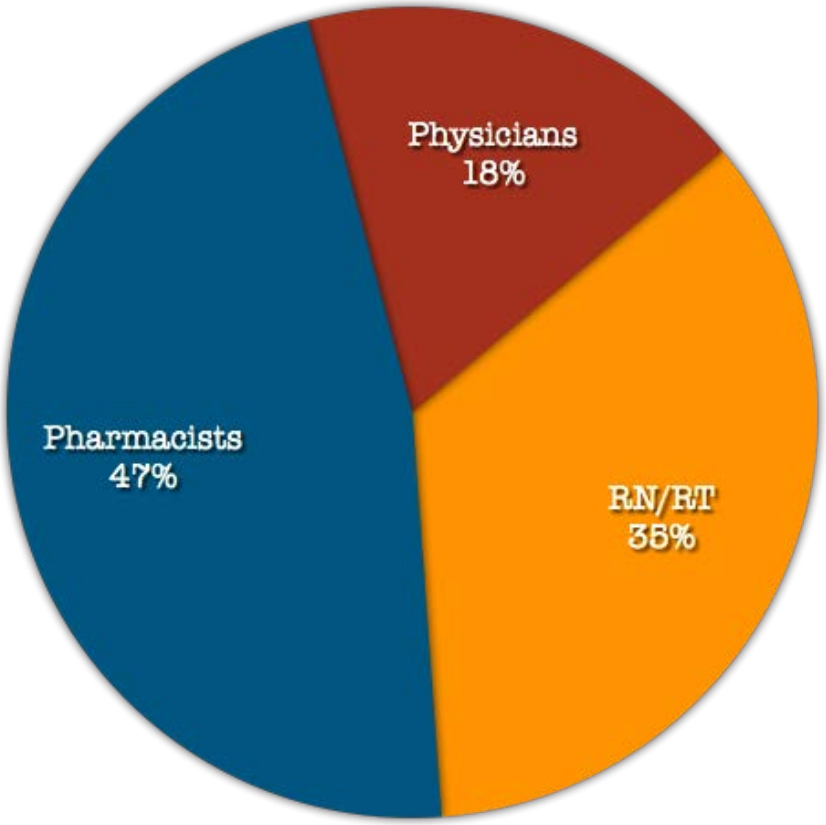
E mail link provided to:

- hospital pharmacists
- IHI hospital networks
- Premier members

Survey Methodology & Respondents

Profession of Respondents

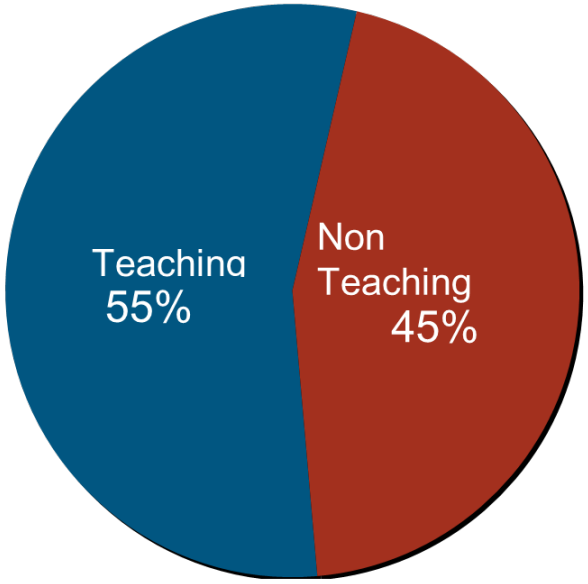




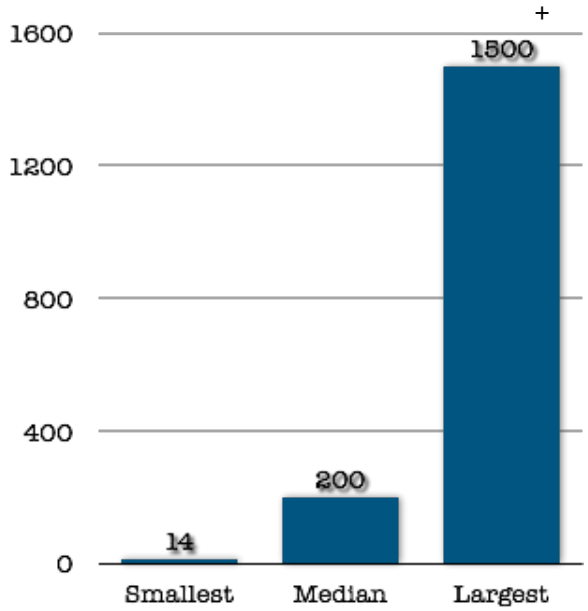
Survey Methodology & Respondents

Results from Hospitals in 40 States

Teaching vs. Non-Teaching



Hospital
(no. of beds)



Statistical Analysis

Anuj Mabuyi, PhD
Assistant Professor Department of Mathematics
Northeastern Illinois University

Beverly Gonzalez, ScM
Biostatistician
Johns Hopkins Bloomberg School of Public Health

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Result Yardstick

Anesthesia Patient Safety Foundation
"Conclusions and Recommendations-Conference on Electronic Monitoring Strategies"

Association for the Advancement of Medical Instrumentation
"Infusing Patients Safely: Priority Issues From AAMI/FDA Infusion Device Summit" (2010)

Institute for Safe Medication Practices
"Safety issues with patient-controlled analgesia Part I - How errors occur" ISMP Med Saf Alert, 2003 Jul 10; 8(14):1
"Part II - How to Prevent Errors - Safety Issues with Patient-Controlled Analgesia (July 24, 2003)

The Joint Commission
"Safe use of opioids in hospitals"
Sentinel Event Alert, Issue 49, August 8, 2012

National Comprehensive Cancer Network
Adult Cancer Pain Guidelines (2010)

Pennsylvania Patient Safety Authority
"Making Patient-Controlled Analgesia Safer for Patients"
Vol. 8, No. 3 (September 2011)

Numerous Peer-Reviewed Research and Studies

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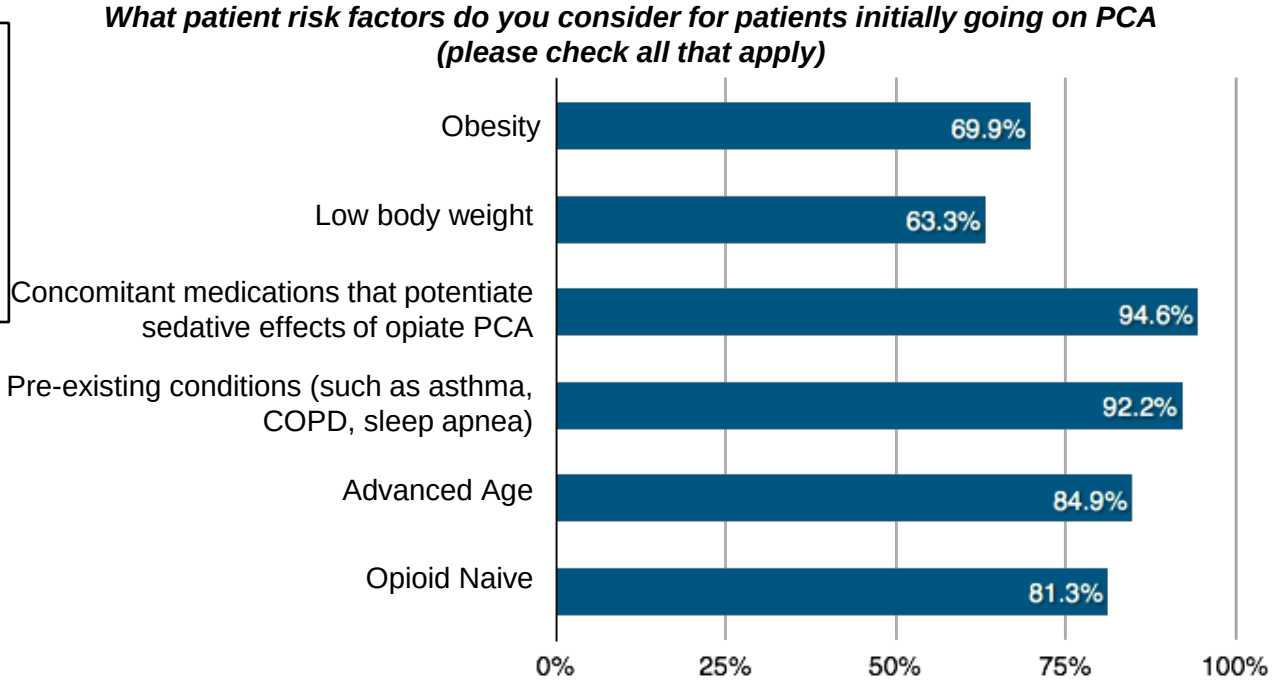
Risk Factors Inconsistently Considered Puts Patients At Risk

Tremendous variation in treatment received by patients across the country:

- **About 2 out of 3 hospitals not considering all six major patient risk factors**
- **More than 60 percent of respondents are considering five or less factors**
- **Less than 40 percent are considering all six patient risk factors**

Six major patient risk factors listed by healthcare organizations like The Joint Commission and ISMP



Risk Factors Inconsistently Considered Puts Patients At Risk: Opioid Naive

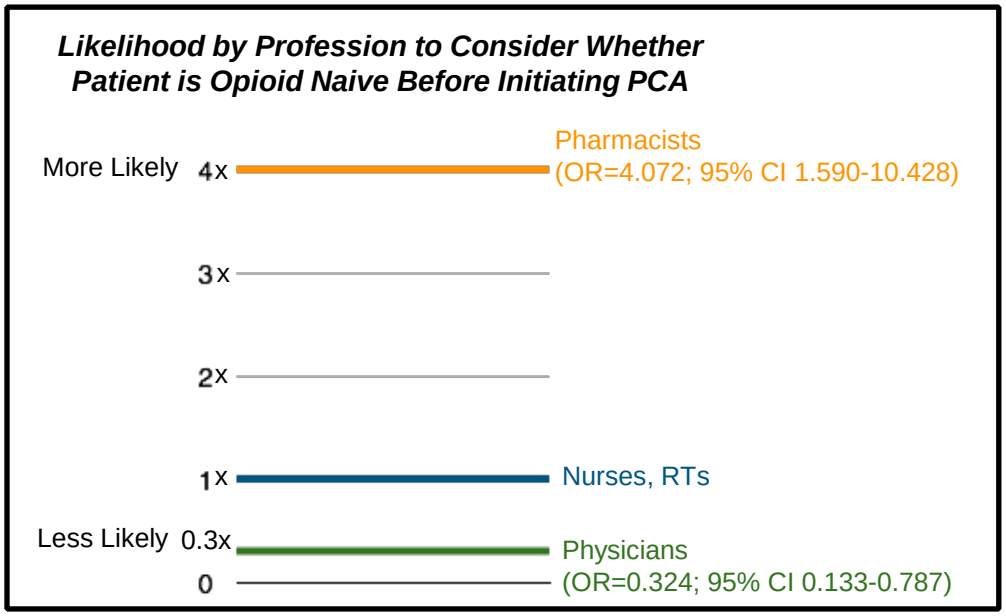
Recommendation

The Joint Commission:
take "extra precautions with patients who are new to opioids or who are being restarted on opioids"
[Sentinel Event Alert, Issue 49, August 8, 2012]

Practice

Almost 1 out of 5 hospitals are not assessing patients for being opioid naive:

- Pharmacists 4x more likely to consider
- Physicians approximately 70% less likely to consider



Risk Factors Inconsistently Considered Puts Patients At Risk: Obese Patients

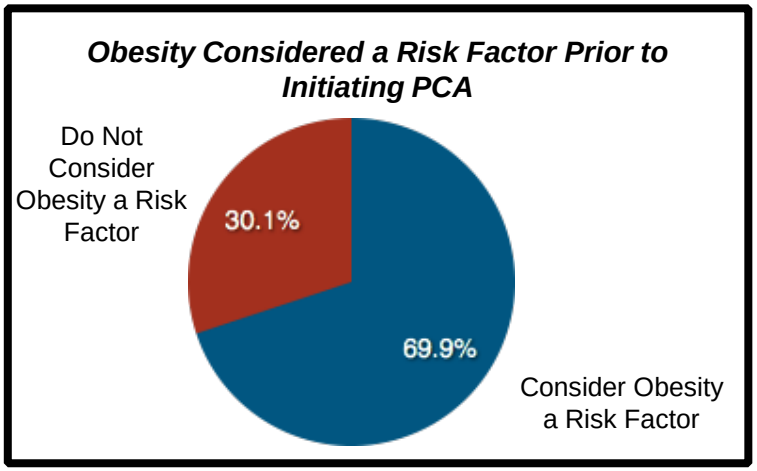
Recommendation

Many studies have shown the increased risk of using anesthesia with obese patients

[J. Ingrande and H. J. M. Lemmens, "Dose adjustment of anaesthetics in the morbidly obese" British of Journal of Anesthesia Volume 105, Issue suppl 1]

Practice

Three out of every 10 hospitals do not consider obesity as a patient risk factor



Risk Factors Inconsistently Considered Puts Patients At Risk: Advanced Age

Recommendation

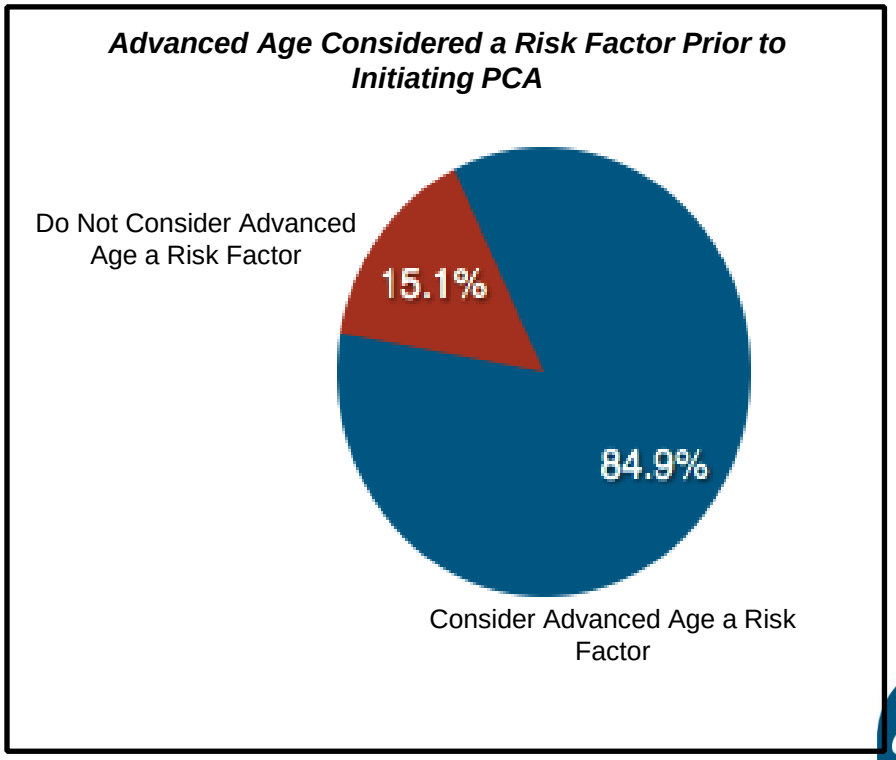
The Joint Commission cautions against the use of opioids in older patients because of the heightened risk of oversedation and respiratory depression

[The Joint Commission, Sentinel Event Alert, Issue 49, August 8, 2012]:

- 2.8 times higher for individuals aged 61-70
- 5.4 times higher for age 71-80
- 8.7 times higher for those over age 80

Practice

About three out of every 20 hospitals do not consider advanced age as a patient risk factor



Double Checks Inconsistently Performed Puts Patients At Risk

Approximately 70% of PCA adverse events are due to errors associated with pump use

(e.g., misprogrammed doses and concentrations, installation of the wrong drug or concentration)

[Pennsylvania Patient Safety Authority, "Making Patient-Controlled Analgesia Safer for Patients" Vol. 8, No. 3 (September 2011)]

- **Patient's identification —**
  Is the correct patient receiving the opioid?
- **Patient allergies —**
  Is the patient allergic to the medication?
- **Drug selection and concentration —**
  Is the patient receiving the prescribed medication and dosage?
- **Dose adjustments —**
  Has any dose adjustment been completed?
- **PCA pump settings —**
  Has the pump been programmed correctly?
- **Line attachment —**
  Has the pump been attached correctly to the patient?

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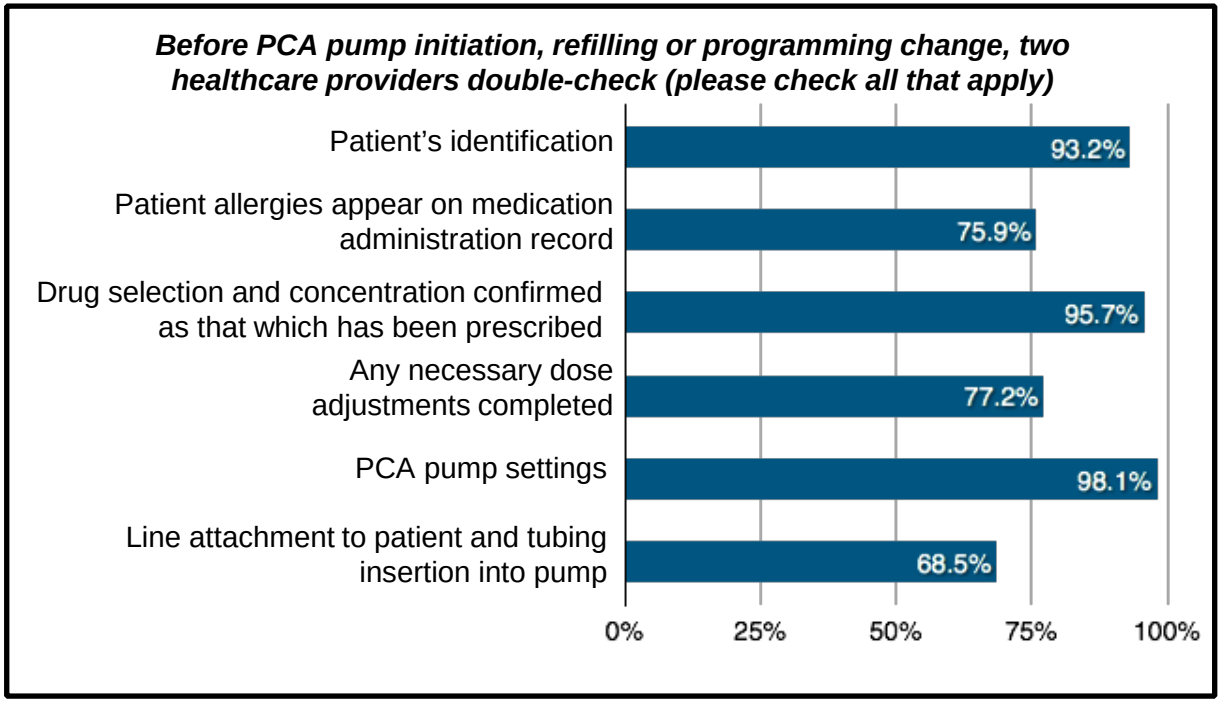
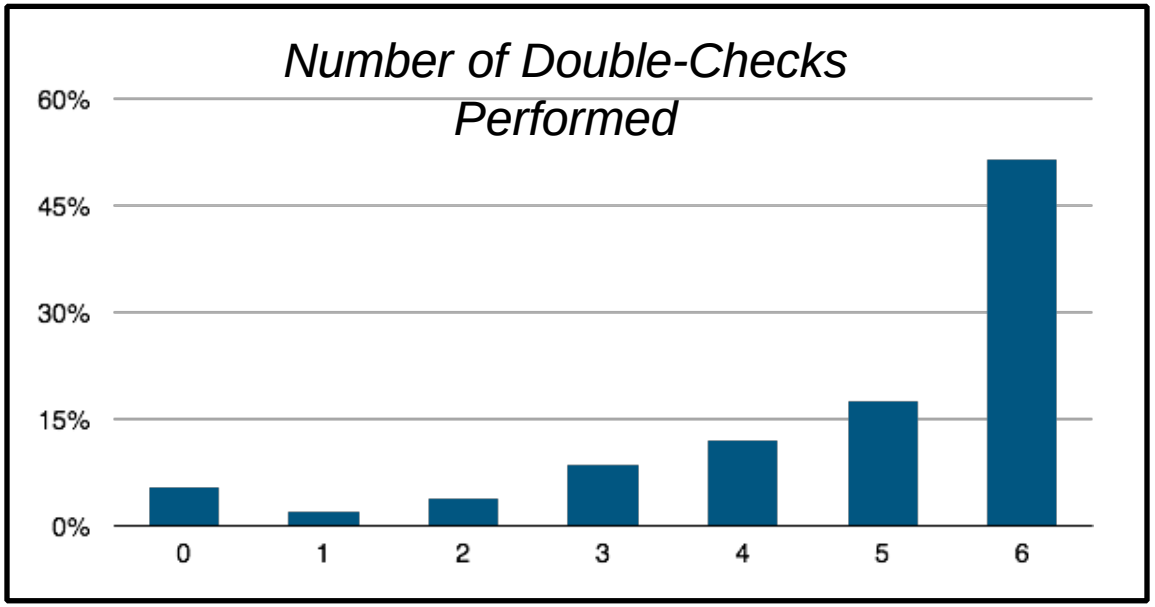
Double Checks Inconsistently Performed Puts Patients At Risk

There is great variation on what double-checks are made



Double Checks Inconsistently Performed Puts Patients At Risk

- **Only slightly more than 1 out of every 2 hospitals (51.19%) performed all six double-checks**
- **1 out of ten hospitals performed one or less double checks (10.71%)**



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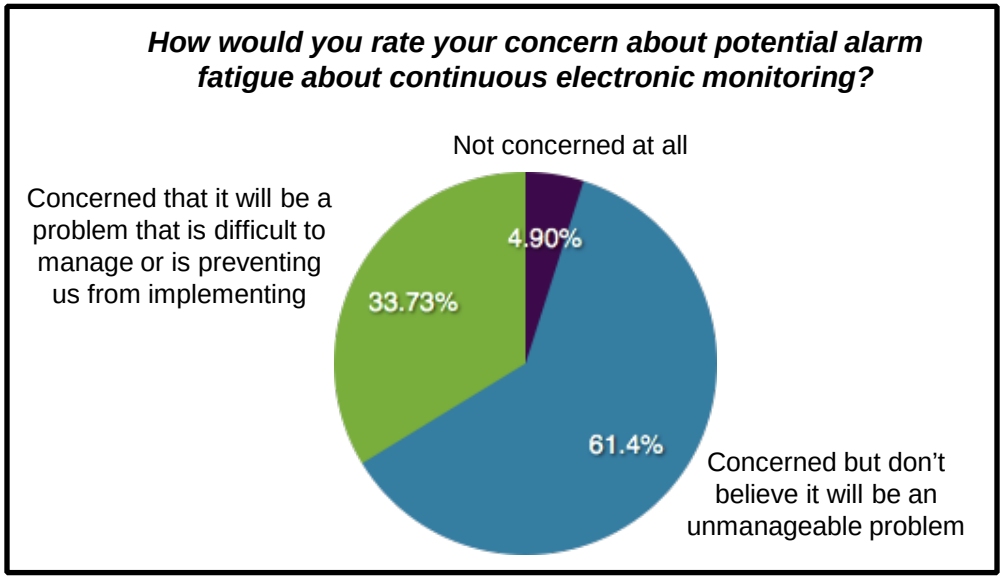
Reducing Alarm Fatigue Would Increase Use of Patient Monitoring: Concern About Alarm Fatigue

More than 19 in 20 hospitals (95.1%) say they are concerned about alarm fatigue



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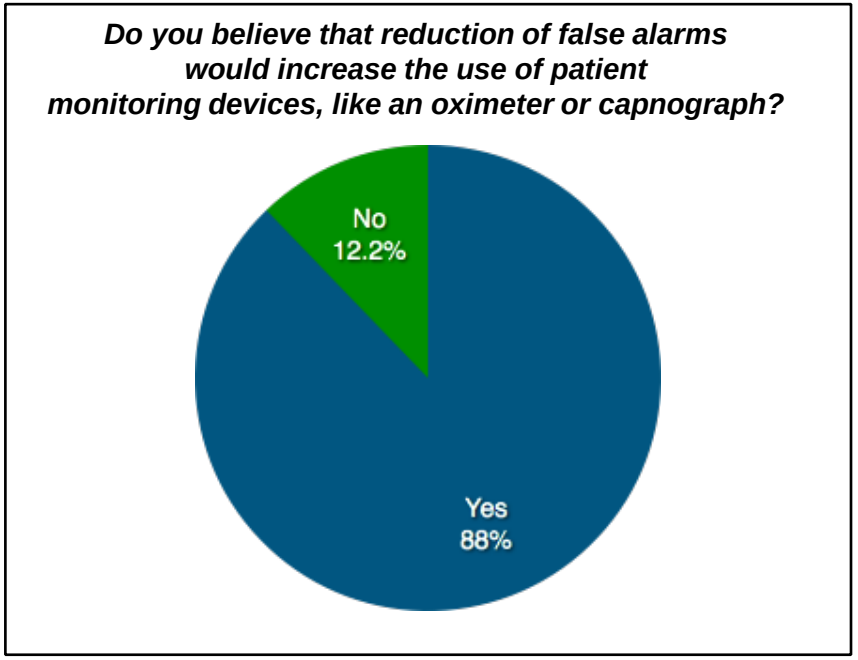
Reducing Alarm Fatigue Would Increase Use of Patient Monitoring

If No Alarm Fatigue, More Hospitals Would Monitor

Almost one in ten hospitals (87.8 percent) believe that a reduction of false alarms would increase the use of patient monitoring devices, like an oximeter or capnograph.



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Reducing Alarm Fatigue Would Increase Use of Patient Monitoring: Tools and Training Hospitals Want

Ease of Assessment: Need for Single Indicator

Seven out of 10 hospitals (70.7%) would like "a single indicator that accurately incorporates key vital signs, such as pulse rate, SpO2, respiratory rate, and etCO2."

Those concerned alarm fatigue is an unmanageable problem:

- more than twice as likely to want a single-indicator assessment tool (OR=2.278; 95% CI 1.073-4.838)
- recommendations for ease of assessment for their nursing staff (OR=2.039; 95% CI 0.992-4.190).

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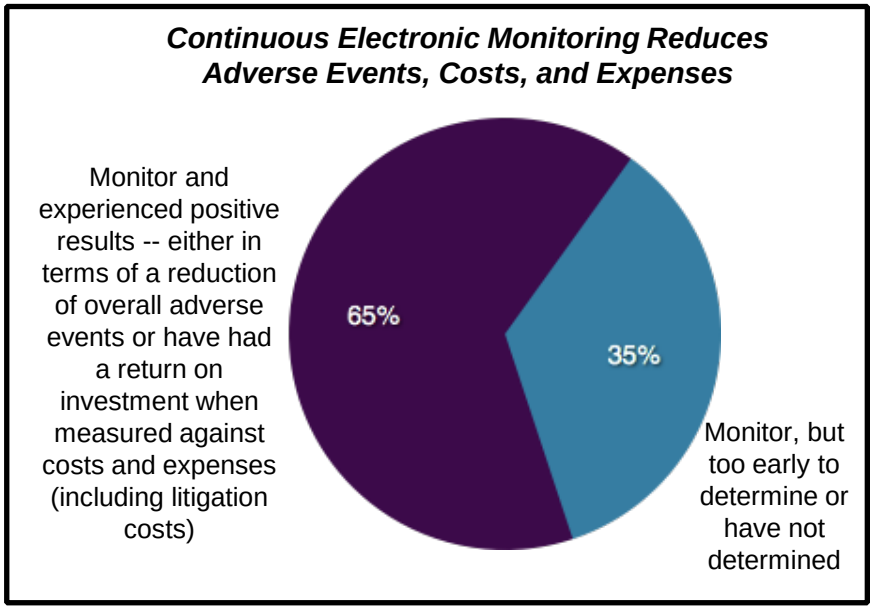
Continuous Electronic Monitoring Reduces Adverse Events & Hospital Expenditures

Continuous Electronic Monitoring Reduces Adverse Events, Costs, and Expenses

- Of those hospitals that monitor some or all patients with pulse oximetry or capnography:
  - 65 percent have experienced positive results -- either in terms of a reduction of overall adverse events or costs and expenses
  - 35% say it is “too early to determine or have not determined.”

- Those using smart pumps with integrated end tidal monitoring were almost three times more likely to have had a reduction in adverse events or a return on investment in terms of a reduction in costs and expenses (OR=2.789; 95% CI 1.112-6.996).



Continuous Electronic Monitoring Reduces Adverse Events & Hospital Expenditures

Continuous Electronic Monitoring Will Become Standard Procedure

Of the hospitals that are not electronically monitoring any of their patients, almost nine out of 10 (86.7 percent) say they are considering the use of monitoring.

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