

Never events continue to occur in young surgical patients:

Evidence from the Nationwide Inpatient Sample, 2003-2012



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Presenter Disclosures

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- (1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose



This year... a snapshot

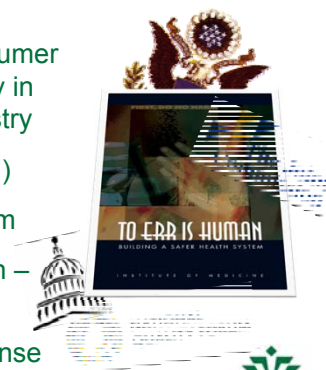
Over 16 Million Inpatient Surgical Procedures

- ✓ 1.9% of these procedures will result in a surgical site infection (SSI)
- ✓ Over 4,000 Retained Surgical Items
- ✓ \$10 Billion in Medical Malpractice Payments



Surgical Improvement: A National Priority

- ✓ President's Advisory Commission on Consumer Protection and Quality in the Health Care Industry
- ✓ To Err Is Human (IOM)
- ✓ National Quality Forum
- ✓ The Joint Commission – Sentinel Events
- ✓ Congressional Response



Methods

Weighted data from the 2003 to 2012 releases of the Nationwide Inpatient Samples were analyzed

- Restricted to patients 0-17 years of age

Identified patients undergoing surgery using HCUP Surgery Flag Software

- Restricted to procedures meeting “narrow” definition of surgery



Methods

Identified “never events” using ICD-9 codes (diagnosis 2-15 or E-Code 1-4)

- Assumption: Diagnosis 1 was the primary reason for hospital admission.
- Dichotomized as yes/no never event

Examined unadjusted trends in never events using weighted frequencies.

- Used NIS trend weights to account for sampling differences between years.

Examined adjusted trends using logistic regression (odds of never event occurring)



Methods

Also compared LOS, charges, and number of procedures between groups (with/without never event)

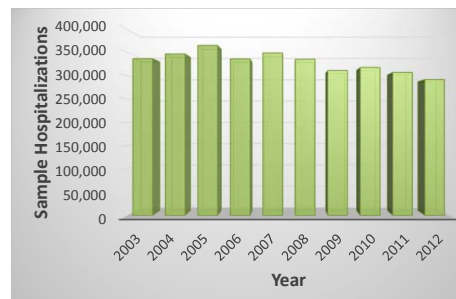
- T-test or non-parametric equivalent
- Charges & Cost converted to 2015 dollars (using CPI factor)
- Cost estimated using charge-to-cost ratio (HCUP)



Sample Characteristics

Total of 3,294,496 records

Incidence: 15,631,089 hospitalizations



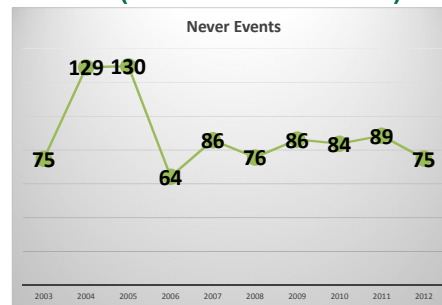
Sample Characteristics

Mean Age: 2.3 years (Std Dev: 5 years)
Gender: 87.4% male
Race/Ethnicity: 47.9% White; 11.9% African American; 9.5% Hispanic; 30.7% Other/Unknown
Primary Payer: 56.8% Private; 35.9% Medicaid; 7.3% Other
Most Common Surgical Procedure: Laproscopic Appendectomy (N=92,691)



Results

Never Events (Sample): 189 [Mean Age: 2.3]
Never Events (Incidence Estimate): 892



Results

Never Event	Label	Median	Q1	Q3	Never Event	Median	Q1	Q3	p-value
No	Length of stay (Days)	2	2	3	Yes	7	3	28	<0.0001
	OR Procs (#)	1	1	1		2	1	4	<0.0001
	Total charges (\$)	3,345	1,905	12,910		50,222	24,932	176,488	<0.0001



Methods

When adjusted for patient characteristics:

- **No difference in odds of never event between years or region**
- **Females 3x more likely than males**
 - **OR=3.02 (2.46-3.70)**
- **Whites less likely than minorities →**
 - **African Americans OR=2.02 (1.55-2.62)**
 - **Other Races OR=2.01 (1.67-2.43)**



Discussion

Root Causes

- ✓ Absence of policies and procedures
- ✓ Failure to comply with existing policies and procedures
- ✓ Problems with hierarchy and intimidation
- ✓ Failures in communication
- ✓ Inadequate/incomplete education of staff



Discussions

Mixed evidence as to effectiveness of checklists to improve patient safety

Most research in this area is in adult patients, particularly Medicare & Medicaid

- **Policy of non-reimbursement has made this patients a priority**

More research is needed in pediatrics!



Study Limitations

Administrative data

- Possibility of miscoding
- Possibility of non-reporting

May have under-estimated occurrence of never events

- Conservative estimate

Charges may not reflect never event

- Typically, no reimbursement for these events
- Likely no charges for these events



Next Steps

Incorporate 2013 NIS data

Compare findings to National Practitioner Data Bank statistics

Expand to include AHRQ Pediatric Quality Indicators

Consider matched cohort



Conclusions

Never events continue to occur in pediatric surgical patients

Conservative Estimate:



Thank you!

