Never events continue to occur in young surgical patients:
Evidence from the Nationwide Inpatient Sample, 2003-2012

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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

Presenter Disclosures
Bryce A. Van Doren
(1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:
No relationships to disclose

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:
Laparoscopic Appendectomy (N=92,691)

Results

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

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

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

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!

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!