

AHRQ Patient Safety Indicator Accidental Puncture and Laceration: A multi-disciplinary review

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Patient Safety Indicators

- Patient Safety Indicators - a tool developed by the Agency for Healthcare Research and Quality (AHRQ)
 - Screens for problems that patients experience as result exposure to the health care system
 - Identifies potentially preventable complications that occur during an inpatient hospitalization
 - Uses administrative billing data



Patient Safety Indicators

- Cases identified by specific ICD-9-CM diagnosis codes:
 - Must be a secondary diagnosis
 - Excluded if diagnosis is Present On Admission (POA)
 - Initial care and complication of care need to occur during the same hospitalization



Public Reporting

- Several PSIs added to list of measures hospitals in USA required to report to receive 2010 Medicare payment update
 - Death among surgical patients w/ serious treatable complications
 - Post op wound dehiscence
 - Iatrogenic pneumothorax
 - **Accidental Puncture and Laceration (APL)**
 - Patient Safety Composite



APL Algorithm

- Cases for inclusions in the APL algorithm are identified by ICD-9-CM diagnosis code **998.2 - Accidental puncture/ laceration during a procedure**
 - Algorithm does not require a reparative procedure code



Research Objective

- To conduct a validation study to determine if the accidental punctures and lacerations identified by PSI algorithm are
 - true performance/quality issues
 - coding issues
 - documentation issues
- Outcomes assessed
 - Agreement w/ initial assignment of APL code
 - Degree of preventability determined by physicians



Baseline Data

Mayo Clinic 2007 performance data

- Observed: 15 occurrences per 1000 cases
- Expected: 5 occurrences per 1000 cases
- **Benchmark: 5.3 occurrences per 1000 cases**
(comparative mean-University HealthSystem Consortium)



Methods

- Random sample of 50 charts from ~800 cases identified by APL algorithm for 2007
 - 30 GI/ General Surgery
 - 10 Chest
 - 10 Head and Neck
- Population studied:
 - Includes
 - All medical and surgical patients
 - 18 years of age and older
 - Excludes
 - Any case flagged as POA
 - Pregnancy and childbirth



Methods: Record Review

- Multi-disciplinary review team
 - Colon/rectal surgeon
 - Thoracic surgeon
 - RN w/ acute care hospital experience
 - Health Services Analyst w/ coding background
- Independently reviewed cases to reduce bias
- Group meeting to come to consensus with APL code assignment (998.2)



Methods: Preventability Rating

- Degree of preventability determined by physician review team members
 - Preventable
 - Possibly Preventable
 - Not Preventable
- Preventability assigned **only** for cases with agreement of the APL code



Review Results

- Agreed with APL code in only 11 cases
 - APL code appropriately assigned in ~20% of each sampled segment
- Disagreed with APL code assignment in 39 of 50 cases (78%)
 - Nothing occurred other than the expected operative course
 - Discordant w/ 2007 AHRQ validation study indicating 91% of APLs were true events



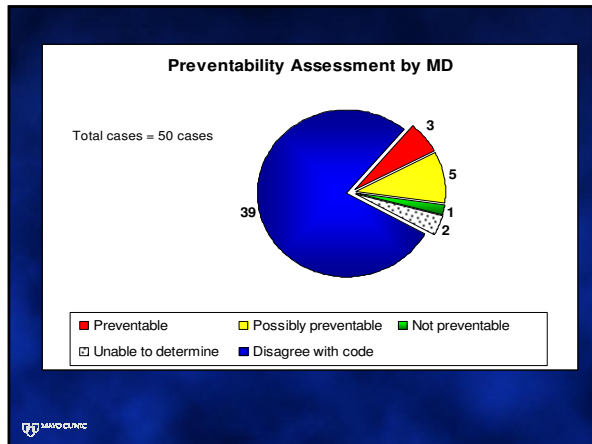
Inter-rater agreement w/ assignment of APL Code

KAPPA Scores

	Surgeon I	Surgeon II	Nurse
Surgeon II	0.50		
Nurse	0.32	0.32	
Analyst/Coder	0.42	0.42	0.63

SE range(0.101-0.177)





- ### Reasons for Disagreement w/ APL code
- Puncture and laceration considered to be:
 - Incidental to surgery (adhesions/scarring from previous surgery)
 - Progression of disease itself (metastatic cancer)
 - Expected outcome of a complex surgery (redo surgery or high risk tertiary care case)

- ### APL Examples (39 cases)
- General Surgery (23 cases)
 - 13 serosal/seromuscular injuries
 - 2 splenectomies (not unexpected due to the type of surgery)
 - 1 POA
 - 1 case - no APL in op report
 - 1 case - documentation error
 - Cardiac/Thoracic Surgery (8 cases)
 - 6 cases-artery/vein injuries
 - 1 case -no APL in op report
 - Head/Neck/Spine Surgery (8 cases)
 - 6 dural injuries
 - (APL revised to exclude spine surgery/ and dural injuries)

Analysis: Agree & Disagree w/ APL

	<u>Agree w/ APL</u>	<u>Disagree w/ APL</u>	<u>p-value</u>
SOI (APR-DRG)	2.56	2.32	0.522
ROM (APR-DRG)	2.20	1.97	0.507
Avg. Cost	\$16,142	\$25,410	0.368

Analysis: APL & No APL

	<u>Agree w/ APL</u>	<u>No APL</u>	<u>p-value</u>
SOI (APR-DRG)	2.56	2.44	0.865
ROM (APR-DRG)	2.20	2.00	0.708
Avg. Cost	\$16,142	\$21,604	0.820

- ### Conclusion
- Most APLs do not negatively impact the patient
 - Identification of APL varied based on medical knowledge of reviewer
 - Variability in coding could result in over/under reporting
 - APL is an effective screening tool:
 - events identified may not always represent preventable events

Study Limitations

- Only one institution (2 hospitals)
- Academic medical center
- Tertiary care center
 - Referral patients with complex medical conditions
- Findings may not be generalizable to other hospitals



Questions ??

