Grim Tales: Three Stories of VA Documentation Failures

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Disclaimer

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Quiz Question

1. How confident are you in the CDW data? (1-lowest to 5- completely confident)

2. Which do you have more confidence in, structured (ICD-9/10, CPT, Etc.) or notes?

Morals of the Stories

- □ Many standard or typical course of care actions do not make it to structured data.

- □ These clinical practices may not even make to notes.

- □ Don't assume completeness of the data.

Setting the Scene

- These stories were collected as part of a 4-year HSR-funded grant studying adverse events

    - Interventional radiology procedures from FY17-20 (pre-COVID)

    - GI endoscopy procedures from FY17-20, then from FY19-22 to include community care data

- Procedure cohorts included patient, procedure, and facility characteristics from CDW data

Adverse Event Surveillance

- Programmed electronic adverse event (AE) triggers to identify high-risk procedures

- Triggers are electronic algorithms for use with retrospective data that flag concerning patterns of care

  - E.g., post-procedure emergency department visit, or

  - Clinical note for a 'code blue' on procedure day

- Cases were chart reviewed to identify adverse events (trigger-flagged enriched)

- Chart review data were used to develop algorithms to identify AEs from text and structured CDW data

Introduction

We examine 3 scenarios to show issues with VA data

1. Anesthesia administration

2. Antiemetic drug administration in the emergency room

3. Chest tube placement for pneumothorax after percutaneous lung biopsy

Data Sources

CDW

Claims (ICDs, CPTs)

Pharmacy

Outpat Provider/Staff

Laboratory

Pathology

Imaging – Radiology reports

Clinical notes (TIU)

Story 1: The Missing Anesthesiologist

Objective:

Classify cases into conscious sedation vs general anesthesia and examine differences in adverse event rates.

Method:

Identify procedures where either sedation or anesthesia could be used in CDW, use chart review data to confirm anesthesia flags are valid, analyze data.

Problem:

In chart review results, 18% of IR procedures missing anesthesia information in chart review. *Where is this information?*

Anesthesia Continuum

Sedation →

- "Conscious"/"moderate"
- Depending on dose and timing, can be administered by a nurse "minimal"
- "Moderate" administered by MD or nurse anesthesiologist (CRNA)

Anesthesia

- Patient is unconscious
- Only administered by MD/CRNA
- "Deep"/"MAC" (monitored anesthesia care)
- "GA" (general anesthesia), "GETA" (general endotracheal anesthesia)

Searching for Clues

- Anesthesia data are in CDW Surgical Tables, but interventional radiology and GI are invasive procedures
- No specific field for anesthesia use, but data should be recorded in
  - procedure codes (CPT code for anesthesia administration)
  - provider table (one of the providers attached to procedure is an MD or nurse anesthesiologist)
  - medication records (drug order or fill for anesthesia medication)
  - clinical notes (anesthesia note)

Anesthesia Chart Review Examples

- Snippets of discordant note text for interventional radiology:
- Case #1
  - Note title "NURSING MODERATE SEDATION PROCEDURE NOTE" and note text itself describes intubation for GETA
  - Also has note title "ANESTHESIA DAY OF SURGERY NOTE" and text says "Plan: General" and "Medications: Provided by anesthesia Department"
- Case #2
  - CPT code for "CT MODERATE SEDATION INITIAL 15 MIN (99152)"
  - Radiology report text says: "Patient was placed under general anesthesia and intraprocedural monitoring was provided by the Department of Anesthesia."

Anesthesia Results

N=2,670 ablation procedures (selected because these are only done with general anesthesia by an MD or nurse anesthesiologist)

Method	Result	Concern
CPT code	1,513 (56%) had a CPT code for anesthesia administration	• Cannot tell which drugs were administered • Do not know if missing CPTs mean no sedation • CPT code use is facility dependent
Provider table	1,550 (58%) had an MD or nurse anesthesiologist attached to the procedure	• Does not distinguish MAC/general from moderate or conscious sedation • Workload documentation is facility dependent
Medication order in CPRS	2 cases	Too infrequent to be useful
TIU clinical note related to anesthesia	2,215 (83%) had a note title that included "Sedat" or "Anesth"	• Cannot tell which drugs were administered • Do not know if missing notes = no sedation • Could be anesthesia plan or informed consent, not what was administered

What Does this Mean?

- We searched for clues in a set of procedures where everything should have been general/MAC anesthesia by an MD or CRNA

  - Combining notes and provider flags identified anesthesia provider presence in 2,218 (83%) of cases…should be 100%

  - Even when data on anesthesia presence existed, there was no information on drugs/dosage/timing

- Documenting anesthesia varies by facility and even provider based on our chart review and CDW data analysis

- With such unreliable data, we cannot compare adverse event outcomes

  Moral of the story? DOCUMENTATION FAILURE

Where Else Could it Be?

- Is the missing anesthesia problem limited to interventional radiology?

- Examined anesthesia vs conscious sedation in GI endoscopy procedures

- Chart review found data missing in 4% of cases, but our CDW flags were similarly limited in distinguishing anesthesia and sedation, and facility differences were a problem

- Anesthesiologists on team suggested data are stored outside of CDW

  - 3rd party system, e.g. Innovian or Picis

  - Used by individual facilities, not enterprise-wide

  - Many possible variables for anesthesia data (e.g., timing, dose), not every facility contracts for every variable

- What if we can find anesthesia data in Boston VA's Innovian data?

GI Chart Review and Anesthesia Flags
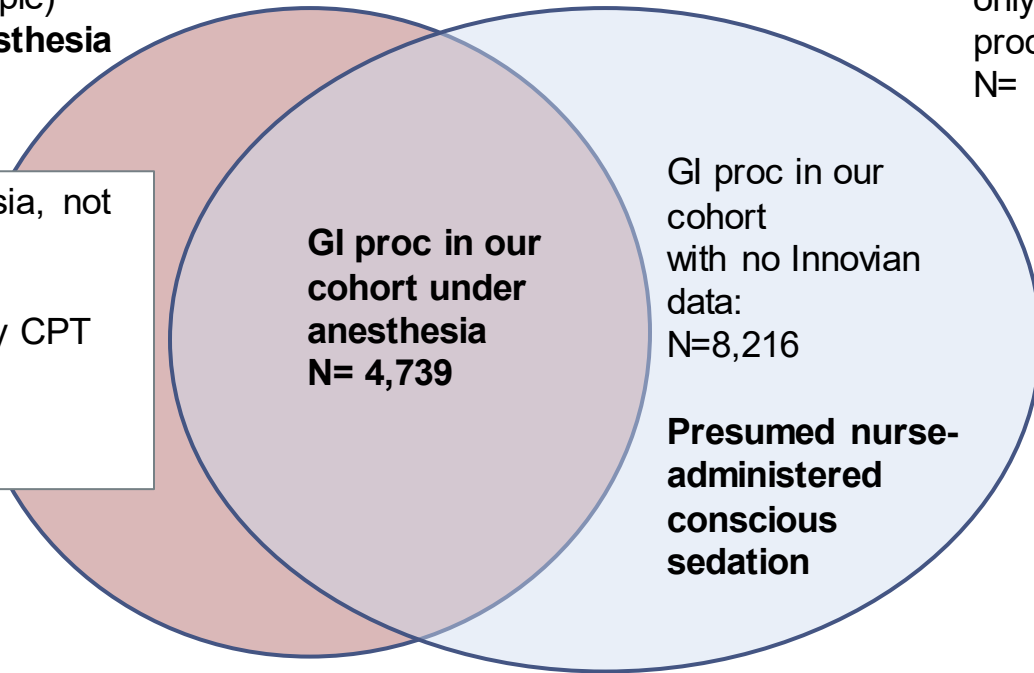
- ☐ ≈2000 chart-reviewed GI cases FY17-19

		Chart Review Result				
		Sedation	Anesthesia	Unsedated	No Data	Total (%)
CDW Flags (CPT code, Provider Type, TIU note)	Sedation	367	12	5	4	388 (20%)
	Flags for Sedation and/or Anesthesia	101	66	0	4	171 (9%)
	Anesthesia	161	566	5	52	784 (40%)
	Unknown	527	33	32	24	616 (31%)
	Total (%)	1,156 (59%)	677 (35%)	42 (2%)	84 (4%)	1,959

Innovian – Boston VA GI Procedures

Innovian cohort CY2017-22
–GI MDs from our sample)
Presumed under anesthesia
N= 6,935

Our GI Cohort CY2017-22 –
Boston only, OP procedures
only, non-surgical GI
procedure, GI MD
N= 12,955

GI proc under anesthesia, not
in sample:
N=2,194
   1) Includes a surgery CPT
   N=1,838
   2) Inpatient case:
   N=356

GI proc in our cohort under anesthesia N= 4,739

GI proc in our
cohort
with no Innovian
data:
N=8,216

Presumed nurse-administered conscious sedation

Cases with no Innovian
record but have a CPT
code for anesthesia:
n=531

*Cases not matched
could be because
Innovian has days it
does not work!*

Anesthesia Results

N=4,739 Innovian anesthesia cases matched to our sample of GI procedures in Boston

Method	Result
CPT code	4,451 (93.9%) had a CPT code for general/MAC anesthesia administration
Provider table	4,451 (93.9%) had an MD or nurse anesthesiologist attached to the procedure
TIU clinical note related to anesthesia	4,704 (99.3%) had a note title that included "Sedat" or "Anesth"

What Does this Mean?

- Innovian data provided an excellent 'gold standard' for testing our anesthesia flags

- We see that anesthesia CPT flags in Boston VA work very well

- Because Innovian does not operate daily (there are routine tech failures where the system is down), our anesthesia CPT flags provide a more complete picture of anesthesia

- Moral of the story? DOCUMENTATION SUCCESS…but we only know because we have a complete picture of anesthesia data in a 3rd party source to test our flags

  - This was only one facility; we have no idea if GI anesthesia flags work in other facilities

  - Cannot tell in the non-matched cases whether it was nurse-administered

  - CDW does not have standardized drug, dose, and timing data, so it is a partial FAIL

Story 2: Who Tossed the Cookie?

Objective:

Assess the rate of severe post operative nausea and vomiting (PONV) events in emergency department visits following GI procedures.

Method:

1. Identify PONV through order of medications used to treat PONV. *results unsatisfactory*

2. Refocused only on Zofran (Ondansetron), the primary drug used to treat PONV.

3. From chart reviewed patients, can we identify structured data to support administration of Ondansetron following the VINCI SOP for medication administration?

Results

- Of 2,459 cases chart reviewed GI procedures (From FY17-FY22), 45 indicated Zofran/Ondansetron was administered in the VA Emergency Department.

- Investigated structured data:
  - Inpatient Dispensed
  - Outpatient Dispensed
  - Inpatient IV Solution and Additive
  - Fee
  - RxIV

- 28 cases (62%) were found to have Zofran/Ondansetron administration documented in any structured data.

- Moral of the story? DOCUMENTATION FAILURE

Why?

Poll Quiz – 3 options

1. Chart review data are wrong

2. Care is performed and not documented in the medical record

3. Other reason – put in Q&A

Story 3: A Tube in the Chest

Objective:

- Identify severe pneumothorax requiring chest tube placement after lung biopsy. Compare rates and risk factors.

Method:

- Identify lung biopsy procedures from IR cohort FY17-March FY20.

- Review structured data for evidence of chest tube placement ≤3 days post biopsy.

- Compare structured data with completed adverse event chart review data (n=205 lung biopsies)

- Augment with keyword search of TIU notes for mention of chest tube placement.

Chest Tube Results

		Chart Review Detected Chest Tube		
		No	**Yes**	**Grand Total**
CPT-coded chest tube	**No**	123	44	167
	Yes	1	37	38
	Grand Total	124	81	205

Of the 81 patients where chart review indicated a chest tube placement, only 37 (46%) had structured data to indicate chest tube placement.

Why no CPT codes?

Poll Quiz – 4 options

1. It's covered by ICD for pneumothorax / other codes

2. CPT Coding for chest tubes is unnecessary

3. Documentation is outside CDW (e.g. inventory data)

4. Other reason – put in Q&A

Augmenting CPT Codes

□ Our fix is augmenting by TIU note documentation.

  ◘ First removed clinical notes where TIU document definition or standard title indicated the note was informed consent

  ◘ Then, pulled text from Radiology Report and TIU Clinical Notes entered at procedure date time up to 3 days post-procedure

    ■ Chest tubes can be placed intraprocedurally for pneumothorax
    ■ Searched text string 'CHEST TUBE'

TIU Exemplars

Non-unique or contrived mentions of chest tube placement

- "Patient developed pneumothorax and chest tube placed"

- "REASON FOR ADMISSION: pneumothorax \nPROCEDURES PERFORMED: Chest tube placement and removal"

- "Patient developed pneumothorax. chest tube was inserted"

- "Chest tube placed for pneumothorax following biopsy"

- "Patient developed pneumothorax during procedure. Plan for outpatient removal of chest tube."

Chest Tube Algorithm Results

		Chart Review Detected Chest Tube		
		No	**Yes**	**Grand Total**
CPT-coded chest tube or TIU note	**No**	118	6	55
	Yes	6	75	36
	Grand Total	124	81	205

Of the 81 patients where chart review indicated a chest tube placement, the combined algorithm with structured and TIU data found 75 (93%).

Moral of the story? DOCUMENTATION FAILURE (in CPT codes)

… but successful documentation in the clinical notes

Data Sources

CDW

Claims (ICDs, CPTs)

Pharmacy

Outpat Provider/Staff

Laboratory

Pathology

Imaging – Radiology reports

Clinical notes (TIU)

VA Data Outside CDW

Chart review – CAPRI, JLV

Community care claims – CDS

Innovian 3rd party data

Front-line clinicians

Moral of the Stories

- You can't use CDW in isolation, you must have front line people involved to understand how data gets into the system.

  - Informatics based projects need clinician team members

- Verify, don't trust.

  - Chart review can be very helpful in confirming CDW flags

- "VA data is a sea of icebergs"

  - Discordant data are a problem that is hard to solve – combining data sources can help

  - Must acknowledge data limitations in research

  - Facility differences imply not missing at random
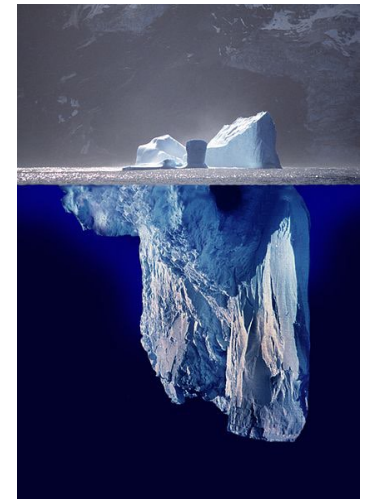
Source: Wikimedia Commons

Epilogue: Where is this going?

VA System Issues

- Change VA workload coding practices
- Surgery vs Invasive Procedures Documentation
  - Surgery has comprehensive documentation
  - Invasive procedures do not
- Will Cerner fix these issues?

Research Issues

- Third party systems, knowledge of and access
- Verification of data
- Caution of overreliance on automated extraction, i.e. NLP

The End

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