Data Integrity: Why it Matters and How to Validate

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Who We Are

- 8 Campuses
- 3 Institutes
- 1 Children’s Hospital
- 160+ Physician Practices
- 17 Community Clinics
- 25 Health Centers
- 18 ExpressCARE Locations
- 1 Children’s ExpressCARE
- 45 Rehab Locations
- 81 Testing and Imaging Locations
- 18,000+ Employees
- 2,005 Physicians
- 834 Advanced Practice Clinicians
- 4,208 Registered Nurses
- 69,346 Acute Admissions
- 274,879 ED Visits
- 1,838 Acute Care Beds
Data Integrity and Validation

- Show of hands....
  - ? Peer Review
  - ? Inter-Rater Reliability Review
  - Who absolutely LOVES to get told about errors

Should NOT be:
- Punitive
- “angry” i.e. red pen
- Demeaning

Give positive feedback
Beneficial for:
- ID trends and OI education
Data Integrity and Validation

- **Data integrity** = consistent, accurate data
  - “The trauma registry data is better than any other research data I have worked with”
    - LVHN Researcher

- **Data validation**
  - Assuring accurate data
  - Assuring complete data
  - Assuring consistent data
Data Integrity and Validation

“There must be a plan for ensuring that the data entered into the trauma registry is accurate and reflects the observations made on the patient (Inter Rater Reliability). This plan must reflect compliance with the PTOS Operations Manual and definitions for data entry.”

Pennsylvania Trauma Systems Foundation Standards of Accreditation

“The Trauma Registry is an essential management tool that contains detailed, reliable, and readily accessible information needed to operate a trauma center.”

Resources for the Optimal Care of the Injured Patient
Why Does It Matter?

- Internally for:
  - Performance Improvement
  - Protocol development
  - Staffing
  - Research
  - Prevention
  - Staff education (all)
  - Cost analysis

- Externally for:
  - Accreditation
  - Performance Improvement
  - National Benchmarking
  - Research
  - Prevention
Who cares if it is wrong?

- Trauma Team!
- Administration!

Incomplete, inaccurate, and/or inconsistent data can lead to

- missed opportunities to identify and improve care
- errors in research results and development of protocols
- Increased costs
- a misunderstanding of your trauma population

Accurate data is a reflection of the care your hospital gives!
Who Should Validate?

EVERYONE!

Registrar – Self
Registrar – Peer
Registrar – Inter-rater reliability
PI, Adult & Pediatric Coordinators
Who Should Validate?

Registrar – self
- Run daily after entering new patients - basic demographic report on key admitting data (LVH)
- Pay attention to what the validator is asking but don’t trust the validator picks up everything
- Before closing a chart, go through start to finish looking for blanks and things that jump out as wrong (fell but n/a for height of fall, etc)

Registrar – Peer
- Monthly peer review to check all data points
- Discuss findings as a TEAM when differences are identified
- Select the right charts for review
  - Ask for suggestions and/or focus on difficult charts such as head or spine injuries, procedures

Registrar – Inter-rater reliability
- Quarterly peer review to check uniformity amongst registrars
- Discuss findings as a TEAM and discuss differences

PI, Adult, Pediatric Coordinators
- Clinical review of key data to look for trends, opportunities for improvement
  - Especially all mortalities, occurrences, transfer in and out
Peer and IRR

- **Peer charts**
  - Rotate who gets who’s chart
    - Reduce/eliminate animosity
  - Pick the appropriate chart: LOS $\geq 10$, patients with blood, trauma activations, specific injuries or procedures, multiple occurrences

- **IRR**
  - Rotate who’s chart it “was”
  - Discuss all data elements looking for any that were abstracted different from the rest of your team
  - Ask registrars to submit an “ugly” chart for IRR

- Record scores on report card for tracking and educating
<table>
<thead>
<tr>
<th><strong>PTOS Trauma Number:</strong></th>
<th>Chart #</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Month:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Demographic Data</strong></td>
<td>Total Possible</td>
</tr>
<tr>
<td><strong>Prehospital Data</strong></td>
<td>Total Possible</td>
</tr>
<tr>
<td><strong>Process of Acute Care</strong></td>
<td>Total Possible</td>
</tr>
<tr>
<td><strong>Clinical Data</strong></td>
<td>Total Possible</td>
</tr>
<tr>
<td><strong>Outcome Data</strong></td>
<td>Total Possible</td>
</tr>
<tr>
<td><strong>Anatomical Diagnoses</strong></td>
<td>Total Possible</td>
</tr>
<tr>
<td><strong>Procedures</strong></td>
<td>Total Possible</td>
</tr>
<tr>
<td><strong>Payer Class</strong></td>
<td>Total Possible</td>
</tr>
<tr>
<td><strong>Receiving Facility</strong></td>
<td>Total Possible</td>
</tr>
<tr>
<td><strong>TQIP</strong></td>
<td>TOTAL POSSIBLE</td>
</tr>
</tbody>
</table>

**Total Data Points Possible** | Total Data Points Correct
**Chart Percentage Accuracy** | **Overall Total Accuracy**
What am I looking for?

Look for:

- **Missing data**
  - Blank or missed data, especially diagnoses, procedures
- **Outliers – LOS or ISS seemingly too high or too low**
- **Inconsistent data**
  - LVH uses custom fields and we cross check admitting floor
  - Check admitting doctors against admitting service
- **Incorrect data**
  - “typos”: MR or Acct. number errors, transposed numbers
    - Encourage usage of menus to avoid errors (typing in doc # that is wrong)
  - Incorrect procedures, diagnoses, occurrences, etc.
  - Diagnoses wording – bilateral, sizes, “lobe”, LOC, things that influence AIS
- **New or different data fields or definitions**
When to Validate

- **Ad hoc**
  - When running other reports that trigger the “I wonder if…” question
  - When someone says, “that’s not the way I do it…”

- **Daily**
  - Entering Registrar Daily Checklist (LVH)
  - Validate and review before close

- **Monthly and quarterly**
  - Peer and IRR charts
  - Standard monthly reports – service admissions, transfers in, etc.
  - Develop a check list and divide and conquer
  - Make promises to deliver
  - Set reminders for yourself

- **Before PTSF and TQIP submissions**

- **So……………………….basically always**
<table>
<thead>
<tr>
<th>JUDY</th>
<th>ROBIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>DASHBOARD Q dashboard patients, R: dashboard (see list of tasks in Dashboard book)</td>
<td>On hold</td>
</tr>
<tr>
<td>Dashboard ID data: Q:failedextub_outcome13, Q:graf/dose_by_date, R: failures</td>
<td>On hold</td>
</tr>
<tr>
<td>helicopter @helicopter_johnw, R: helicopter_johnw (michaela, brian, cl, mdbh)</td>
<td>J J J J J J J J</td>
</tr>
<tr>
<td>Transfer Report</td>
<td>J J J J J J J J</td>
</tr>
<tr>
<td>PI - adult, R: ISS_breaks_for_PI, E: cause to 18, R: cause to 30</td>
<td>J J J J J J J J</td>
</tr>
<tr>
<td>WEEKLY trauma activations for mailing Q, trauma activated, R trauma activation, email Michelle Lepke et al. (RS)</td>
<td>R R R R R R R R</td>
</tr>
<tr>
<td>KAI Geriatric (kai_monthly_summary...), R: gen_conf Stats, cc CL, BS</td>
<td>J J J J J J J J</td>
</tr>
<tr>
<td>Case: Q cassel core r casel coremeasure</td>
<td>R R R</td>
</tr>
<tr>
<td>ED Liaison - ED compliance, MD consult</td>
<td>J J J J J J J J</td>
</tr>
<tr>
<td>Physician mortality list</td>
<td>R R R R R R R R</td>
</tr>
<tr>
<td>Registrar reports</td>
<td>J J J J J J J J</td>
</tr>
<tr>
<td>Transfer Higher - KAI report (RS)</td>
<td>J J J J J J J J</td>
</tr>
<tr>
<td>Transfer from Trauma Centers Q/R (hrd followup)</td>
<td>J J J J J J J J</td>
</tr>
<tr>
<td>DC to Hospice for CL</td>
<td>R R R R R R R R</td>
</tr>
<tr>
<td>Top MONTHLY (see TIEP book) (RS)</td>
<td>R R R R R R R R</td>
</tr>
<tr>
<td>TIEP upload reports monthly/quarterly?</td>
<td>R R R R R R R R</td>
</tr>
<tr>
<td>DATA completeness</td>
<td>J J J J J J J J</td>
</tr>
<tr>
<td>PTOS quarterly reports</td>
<td>J J J J J J J J</td>
</tr>
<tr>
<td>(Q) July: Q nodulysx or neuro, R: mark monthly doc def (adulteds)</td>
<td>R R R R R R R R</td>
</tr>
<tr>
<td>Readmissions (info only, CC does)</td>
<td>R R R R R R R R</td>
</tr>
<tr>
<td>SCORECARD</td>
<td>R R R R R R R R</td>
</tr>
<tr>
<td>MISSINGnon-compliant burn info</td>
<td>R R R R R R R R</td>
</tr>
<tr>
<td>Over/Under</td>
<td>J J J J J J J J</td>
</tr>
</tbody>
</table>
Monthly Validation Sample Reports

- Can use custom fields to look for errors

- Develop reports to quickly show errors on key fields
  - Examples – Post ED destination and admitting Service
  - Sort and compare related columns
  - Patient has a Fall mechanism and height of fall is n/a
  - Use field lengths to quickly see errors

<table>
<thead>
<tr>
<th>PTO S</th>
<th>T#</th>
<th>name</th>
<th>MRN</th>
<th>Age</th>
<th>eda</th>
<th>abs</th>
<th>POST_ED_D AS TEXT</th>
<th>ADMITFLOOR AS TEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>20181700</td>
<td>RABBIT, JACK</td>
<td>1234567</td>
<td>77</td>
<td>5/1/2018</td>
<td>123</td>
<td>ICU/Critical Care Unit</td>
<td>TNICU (J201-215)</td>
</tr>
<tr>
<td>Y</td>
<td>20181750</td>
<td>PAN, PETER</td>
<td>4321567</td>
<td>21</td>
<td>5/12/2018</td>
<td>123</td>
<td>Med/Surg Unit</td>
<td>SAT(TTU) (med s)</td>
</tr>
</tbody>
</table>

- ACCOUNT # IS mr

1234567 15 5/18/2018 ICU/Critical Care Unit Peds ICU(J241-7) Not Admitted

DATA MISMATCH
Monthly Validation Sample Reports

Query: Helicopter from scene

<table>
<thead>
<tr>
<th>EDA Date</th>
<th>Age</th>
<th>Live/Die</th>
<th>Dischg Dest</th>
<th>SCENE</th>
<th>SCENE PROVIDER</th>
<th>TRANSPORT PROVIDER</th>
<th>TRANSP PROV</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/14/2018</td>
<td>31</td>
<td>Alive</td>
<td>Home</td>
<td>AMBULANCE</td>
<td>SUBURBAN EMERGENCY MEDICAL SERVICES</td>
<td>HELICOPTER</td>
<td>ok</td>
</tr>
<tr>
<td>7/28/2018</td>
<td>20</td>
<td>Alive</td>
<td>Home</td>
<td>AMBULANCE</td>
<td>WEST END ALS</td>
<td>HELICOPTER</td>
<td>ok</td>
</tr>
<tr>
<td>7/5/2018</td>
<td>52</td>
<td>Alive</td>
<td>Home</td>
<td>AMBULANCE</td>
<td>APTS</td>
<td>HELICOPTER</td>
<td>wrong</td>
</tr>
</tbody>
</table>

Date entry error

Number of PEDS: 29
Number of AGEGE=56: 215
Average ED_MINUTES: -647.513

Query: Nutrition on Burn Patients

<table>
<thead>
<tr>
<th>#</th>
<th>Age</th>
<th>eda</th>
<th>NUT_ASSESS AS TEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td>20180169</td>
<td>2</td>
<td>1/11/2018</td>
<td>n/a</td>
</tr>
<tr>
<td>20180762</td>
<td>78</td>
<td>2/21/2018</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Daily Double Check

<table>
<thead>
<tr>
<th>PTOS_PT AS TEXT</th>
<th>Trauma Number</th>
<th>Patient Name</th>
<th>MRN</th>
<th>ACCT #</th>
<th>Age</th>
<th>PAT_ADR CI</th>
<th>State</th>
<th>zip code</th>
<th>Gender</th>
<th>Post ED</th>
<th>Destination</th>
<th>Admit Physician</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>5734112</td>
<td>MULL, MARK E</td>
<td>10279158</td>
<td>57</td>
<td>E STROUDSBURG</td>
<td>PA</td>
<td>18301</td>
<td>Male</td>
<td>Med/Surg Unit</td>
<td>KASYCH 8K01-30</td>
<td>Eischen, Malia (TRAUMA)</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>5555555555</td>
<td>TELEMAQUE, CAROL J</td>
<td>10290453</td>
<td>555555555</td>
<td>55</td>
<td>WHITE HAVEN</td>
<td>18661</td>
<td>Female</td>
<td>Trauma Service (General Surgery)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TQIP Validation

- TQIP – don’t wait for the report (or the phone call…), validate:
  - Shock
  - TBI
  - Mortalities
  - Key occurrences
- You don’t want **YOUR DATA** to be the Reason you are here
Recommendations from TQIP

Age
ED Discharge disposition
Hospital Discharge disposition
Gender
Race
Transfer Status
Initial GCS motor in ED
Initial SBP and P
External Cause codes
Ventilation status and ventilator days

All Deaths
ISS >24 and no core complications,
LOS 1-30
LOS 14-30, no core complications or mortality
Age 64, no comorbidities, LOS <=15
Vent >=7 days and no pneumonia/vap
GCS_M 1, no core complications and survives >3 days
Schedule monthly peer reviews and quarterly IRR
Complete review of 5-10% of charts
Schedule of monthly and qtrly. reports
  - Use reports to validate the other 90%
Communicate – POSITIVE and NEGATIVE
Establish goals
  - Create and provide a Registry Report Card
  - Create a visibility board
  - Track and trend accuracy – is someone struggling? Why?
Make It Happen

- Develop a data clarification document for YOUR EMR
  - Include hierarchies
  - Review annually
- Develop, update and share ONE “cheat list” for frequently used codes
  - Procedures
  - Mechanisms
- Make sure all registry staff can run basic reports in RW
- Consider automation from EMR to registry
If nothing else, peer review and validations should result in the Hawthorne effect – people will double check themselves just knowing that their work is being checked.
Questions?

Contact Information:

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