The Creation of a Performance Improvement Patient Safety (PIPS) Data Base:
Taking Quality to the Next Level

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Presentation Objectives

- Overview Data Sources
- Overview PIPS project
- Findings to Date
- Success and Challenges
- Next Steps – Where do we go from here?

Sources of Trauma Data Collected

BC Trauma Registry

- Comprehensive data set, very inclusive, not ISS based
- Inclusion criteria in BC; >48hrs admission, all deaths, all transfers, all pediatrics regardless of LOS or ISS
- Retrospective

Historical Quality Data Base – TPM Collected out of Need

- Separate from the registry (differences in data interpretation)
- Concurrent (major duplication in data collected)
- Used for QA & audit purposes only

Other Data Sources for Quality

- **Discharge Abstract Data Base (DAD)**
  - Only patients admitted (ED NACRS)
  - Minimal data set (not useful for QA/PIPS)
  - Retrospective (CIHI 1-2 years behind)
- **Hospital Quality Database**
  - Minimal data de-identified
  - Event driven
  - No potential link to TR
- **NSQIP**
- **TQIP**

Key Issues Surrounding Data

- Problems with Data and the TR:
  - Most sources are retrospective in nature
  - Most data is not easily accessible in a timely fashion
  - Data is not fully integrated or used for QA concurrently
  - Some data is not easily interpretable to front line staff
  - Differing data definitions
  - Many data entry staff are not clinical experts
    - Data still needs to be validated by clinicians
  - The devil is in the details
    - Continuously pulling charts to gather more information
    - Duplication of work increase's time and labor costs

Missing Piece

Non admitted Trauma Pts → DAD → Admitted pts who don't meet TR criteria → TR

Missing QA data
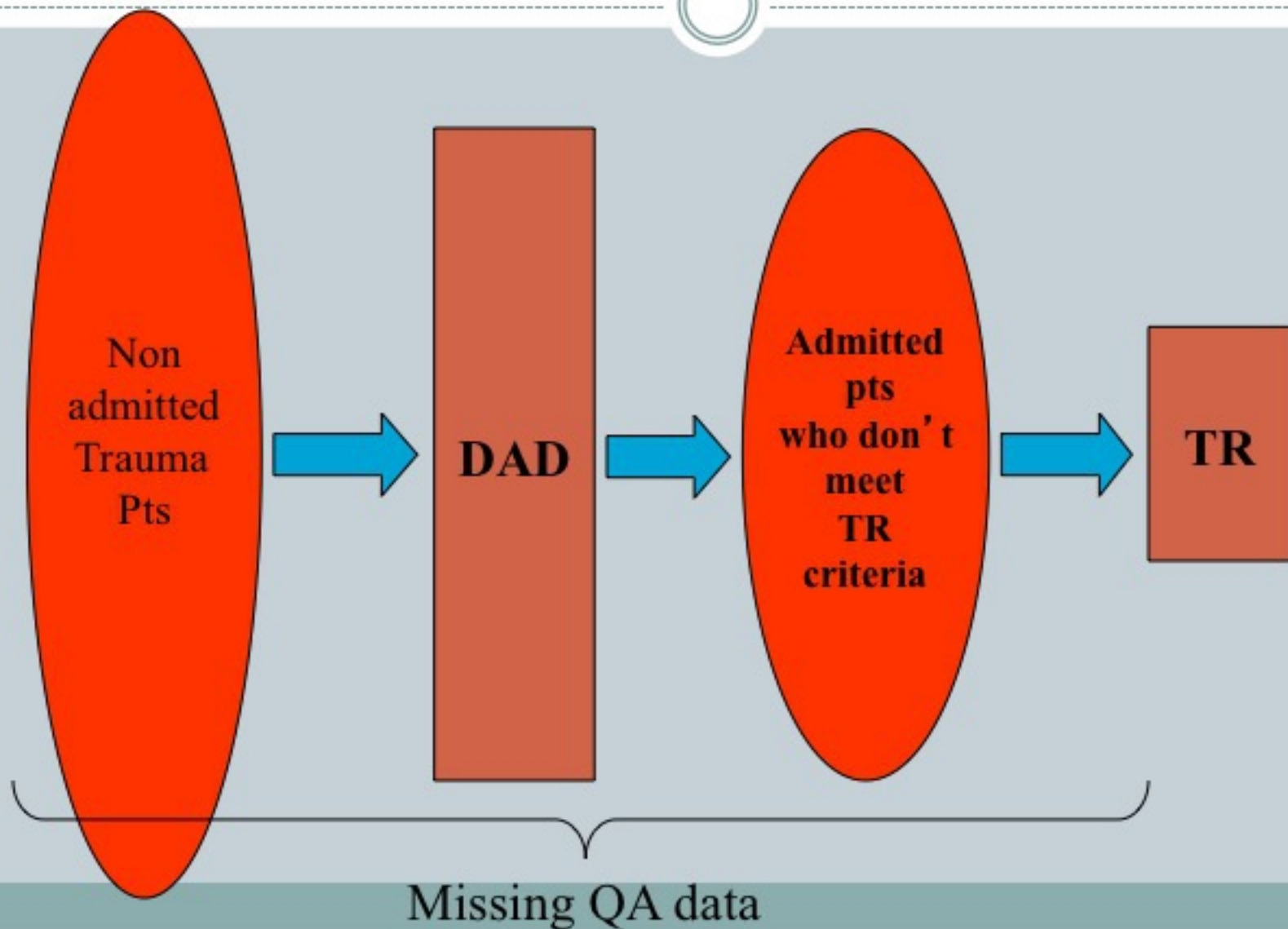
Overview of the PIPS/Pre-Registry Project

- Development a point of care system for all sites in BC that integrates Data, Quality and Performance for both the registry and the program in a concurrent fashion
  - Captured all trauma pts regardless of entry into registry in real time (major & moderate trauma population)
  - Created a goal of concurrency
  - Created a data base that is fully integrated and links within the registry
  - Creation of a standardized data definitions/data dictionary that allows for regional/provincial benchmarking
  - Creation of 26 new Performance indicators
    - Also the ability to create customized indicators as needed when issues /trends become apparent at the site level

How it works

- Daily identification of complications or missed performance indicators as they occur by the trauma coordinator

  - Anecdotal information is identified by the team
  - Validated by the TC
  - Daily rounds → clinical focus
  - Downloaded daily into TR
  - Concurrent
    - Communication
    - Education
    - Discussion
    - Dissemination
    - Evaluation

Performance/Process Indicators Collected

- GCS <14 WITH NO HEAD CT
- GCS <=8 & NO ETT OR SURGICAL AIRWAY
- CRANIOTOMY >2 HRS WITH EDH OR SDH, EXCLUDING ICP MONITORING
- TIME TO HEMORRHAGIC CONTROL > 1 HR WITH SBP < 90
- VTE PROPHYLAXIS STARTED >72 HOURS FROM ADMISSION
- TRANSFER TO SUBACUTE LEVEL OF CARE FACILITY >5 WORKING DAYS AFTER BEING ACCEPTED FOR TRANSFER
- OR > 12 HRS FOR ALL OPEN EXTREMITY FRACTURES
- ENTEROFLEX INSERTION >12 HOURS AFTER WRITTEN ORDER
  - This was created at VGH out of need following new regional protocol
  - Addressed the issue immediately to decrease the incidence of the issue
    - (creating prevention)

Performance/Process Indicators Collected

- SPINE INJURY DX > 12 HRS
- TTA WITH MAJOR TRAUMA (ISS ≥ 12) WITH ABG'S NOT DRAWN OR DRAWN > 1 HOUR FROM ADMISSION
- TTA WITH MAJOR TRAUMA (ISS ≥ 12) WITH TEMPERATURE NOT TAKEN DURING FIRST HOUR IN EMERGENCY DEPARTMENT
- DELAY IN TRAUMA TEAM ACTIVATION
- DELAY IN MD RESPONSE
- DELAY IN OBTAINING CONSULTATION
- DELAY IN DIAGNOSIS

Trauma Complications Collected

- Acute Renal failure
- ARDS
- Bleeding
- Cardiac Arrest with CPR
- Coagulopathy
- Compartment Syndromes
- Decubitus ulcer ***
- Drug or Alcohol withdrawal syndrome
- DVT /PE ***
- Graft/Prosthesis/flap failure
- Intracranial pressure elevation
- MI
- Osteomylitis
- Pneumonia ***
- Stroke/CVA ***
- Surgical site infections***
- Systemic sepsis ***
- Unplanned Intubation
- Unplanned return to OR
- Unplanned return to ICU
- UTI ***

What we've done...strategies...

- Daily and Weekly teaching rounds with care team
- Weekly TIPS (Trauma and Injury Prevention Strategies) newsletter distributed along the continuum
  - Trends reported to stakeholders in existing quality forums
    - Emergency Department, Trauma units (high acuity and ward), Intensive Care Units
  - Identified issues or concerns are sent out with guidance related to suggested clinical changes with evidence attached
    - UTI's, pneumonias, infection conversions, missed performance indicators (temperatures, ABG's,), DVT's, PE's, etc.
- Influence practice and clinical practice guidelines
  - Modification of CPG's and indicators to fit the current practice changes as they occur → reduce the amount of outdated information

What we've seen...

- Early identification of Complications and Performance issues
  - Increased UTI's
  - Increased Aspiration pneumonia's
  - Recurrent pneumothorax post chest tube removal
  - Missed VTE Profolaxis
  - Missed TTA's, TC's, ABG's, Temperatures (all in ED)
  - Delay in feeding tube placements (new policy created since)
- Early intervention and rapid changes in care
- Created a sense of team and shared vision/goal for patient care
- Engages frontline staff in the process
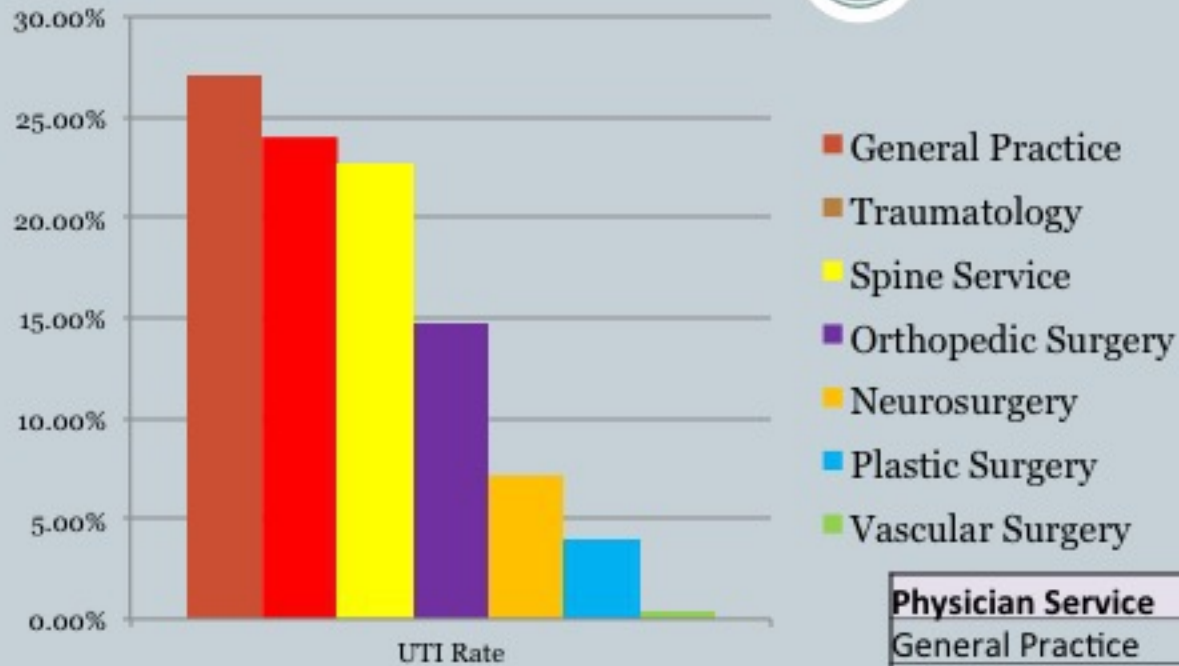 - One of the most exciting results **

Urinary Tract Infections

- Second most common form of healthcare associated infection

- UTIs account for more than 15% of hospital acquired infections*

- Typical pathogens seen: enterococcus, e-coli, staph aureus

- Assess for ≥ 100 million colonizing units

* Center for Disease Control. (2013), Catheter-Associated Urinary Tract Infection (CAUTI) Event. http://www.cdc.gov/nhsn/pdfs/pscmanual/7psccauticurrent.pdf

UTI Rate by MRP

Legend:
- General Practice
- Traumatology
- Spine Service
- Orthopedic Surgery
- Neurosurgery
- Plastic Surgery
- Vascular Surgery

Data from BCTR
Year 2012/2013

Physician Service	UTI Rate	UTI Count
General Practice	27.11%	61
Traumatology	24.00%	54
Spine Service	22.67%	51
Orthopedic Surgery	14.67%	33
Neurosurgery	7.11%	16
Plastic Surgery	4.00%	9
Vascular Surgery	0.44%	1
Total Cases	**100.00%**	**225**

Comparison of UTI Rate and TTA (resuscitative insertion)

2012/2013

CAUTI Stats

- 21.3% of our patients with UTI were TTA's
  - Resuscitative catheter insertion
  - Poor Technique (too many providers inserting)
- 15% were major trauma admits or direct specialty referral transfers in
  - Catheter inserted at another site
- 52.8% were seen in ED and admitted directly to subspecialties (not seen by trauma)
  - Hospitalists, neuro, spine, ortho/trauma, plastics
  - Unsure where the line was inserted

Our Initial Steps

- Creation of a breakthrough lane
- Daily quality huddles
- Monitoring Care Inconsistencies Daily
  - Insertion inconsistencies
  - Urine sampling
  - Documentation
  - Routine Care

Ongoing Work

Standardization of practice

- Reinforce BID pericare
- Change foley monthly
- Remove or change foley if symptoms of UTI
- On-going spot audits with 'Yellow Card'

Re-education of providers inserting catheters

Revise Trauma Service Admission Orders

- Change Foley catheter if inserted in ED or inserted at another facility
- Remove foley catheter
- Create a standard indications for catheter insertion
  - Do they really need it?
  - This is a big change for many

Successes

- Bridged the Gap between the programs and registry
- Created a stronger culture of stakeholder engagement in quality
- Collaboration on all performance processes is now being done in concurrent manner
- Adaptability of database to meet site needs
- Standardized dictionary for data and QA processes
  - Benchmarking in BC is starting with participating sites
- Allowed sites to achieve a higher level of concurrency by front end and back end coding
  - Completion timelines have increased by 12 months
- Allowed us to capture a missed patient population

Challenges

- Change is always difficult !
- Change
  - The culture of the Trauma Registry
  - Trust of the data integrity and accuracy
  - Fear of loss of job/role
- Working with the external vendor - DI
- Looking at a Broader population
  - Generated more work
  - More quality issues identified
  - More process to be created

Next Steps

- Simplified version of the PIPS database/program could be modeled in other acute care settings
  - ACS modeling
  - Medicine is interested
- Ultimate goal is outcomes and benchmarking
  - TQIP
  - NISQIP
  - Create a Canadian National benchmarking model through the NTR
- Taken it on the Road "eTHR project"
  - Electronic Trauma Healthcare Record in Africa and the USA
  - IPAD app

Conclusion

- Created a meaningful concurrent quality model
- Improved care and patient outcomes in real time
- Improved the identification of issues before trends became major issues
- Closed the loop in a more timely fashion
- Enables a timely distribution of feedback to stakeholders
- Engages the frontline team in quality process's thus creating a culture of quality
- Created efficiencies in the BCTR
  - decreased the time per chart used for registry analysis
  - Eliminated redundancies in dual data collection

Questions?