# Surgical Quality Databases:
# What to do when Clinical Definitions Vary

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# Learning Objectives

- At the completion of this educational activity, the learner will be able to:

  – Understand the influence of Physician driven quality initiatives

  – Review Surgical Quality database definitions for common conditions

  – Develop strategies to overcome any differences

# Disclaimer

- Practical information about clinical documentation

- Seek counsel on individual legal and compliance questions

# Surgical quality databases reviewed

- The Society of Thoracic Surgeons (STS) National Database

- American College of Surgeons (ACS) National Surgical Quality Improvement Program (NSQIP)

- Vascular Quality Initiative (VQI)

# Surgical quality databases

## Characteristics

- Developed for Physicians, by Physicians

- Measure and improve the quality of patient care

- Voluntary (+/-)

- Financial investment
  - Membership
  - Dedicated staffing

# Surgical quality databases

## Common processes

- Collaborate with multiple sites

- Collect longitudinal data

- Rigorous abstraction guidelines

- Risk-adjusted

- Nationally validated

- Real-time benchmarked outcomes-based reports

# Surgical quality databases

**Example Outcomes**

- Surgical site infection

- Return to the OR in 30 days

- Median length of stay

- Mortality

- Amputation free survival

- Unplanned reintubation

- Venous thromboembolism

- Bleeding requiring transfusion

- Renal Failure

- Pneumonia

- Myocardial infarction

- Sepsis
- Stroke

# Why should CDI take the time to understand these surgical society databases?

- **Surgeons care about improving outcomes**

- **Surgeons invest time in these initiatives**

- **Surgeons know their risk-adjusters**
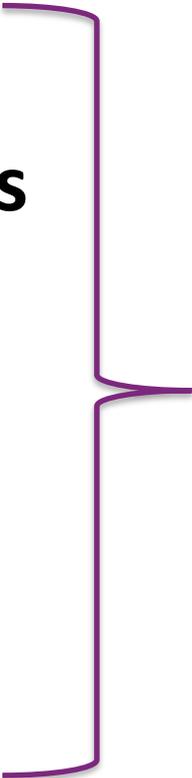
**PHYSICIAN ENGAGEMENT**

# Impact of physician engagement on CDI Programs

## Levels of engagement

1. Apprehension
2. Interest
3. Understanding
4. Commitment

## Plans for alignment

1. Awareness
2. Education
3. Reward
4. Accountability

2017 AHIMA practice Brief.  American Health Information Management Association.

# Impact of CDI Engagement with abstracted databases

- ☑ **Awareness**
- ☐ **Education**

# Types of data used for risk-adjustment

**Surgical quality databases** **vs.** **Administrative databases**

**Abstracted data**

- "Variables" – regardless of author

- Crosses multiple encounters

**Codified data**

→ Diagnoses and Procedure codes

→ Single encounter

# Variables included in abstracted data risk-adjustment

## Abstracted data

- Ambulatory status

- Surgical urgency

- Medication use

- Cardiopulmonary disease severity

- Vital signs

- Laboratory results

- Radiology results

## Administrative data

→ No code

→ No code

→ No code

→ No code

→ Require provider interpretation

# Diagnoses surgeons often decline to document . . .

- Heart failure (specificity)

- Chronic kidney disease

- Acute kidney injury

- Malnutrition

- Post hemorrhagic anemia

- Acute respiratory failure

- Sepsis
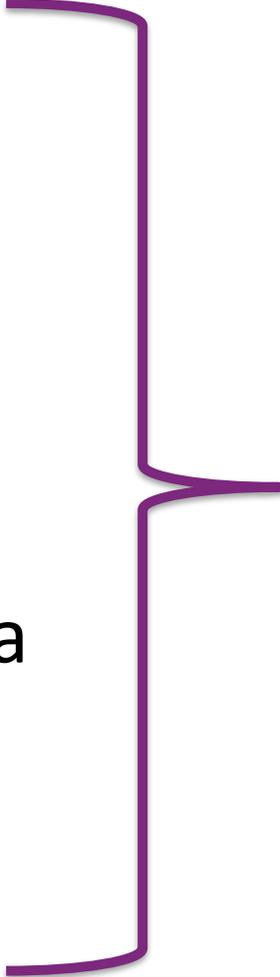
**Possible explanation**

1. Risk adjusters are different

2. Language varies

3. Threshold criteria are different

4. Abstraction often does not require a provider diagnosis

# Case Example

**Left infra-inguinal bypass**

# Left infra-inguinal bypass

- <u>HPI</u>: 77 y.o. female with chronic left LE ischemia secondary to atherosclerotic peripheral vascular disease progressed to severe continuous rest pain interfering with activity and sleep.

- <u>PMH</u>: COPD, HTN, and  a history of heart failure

- <u>Exam</u>: left lower extremity is cool and painful to touch; decreased pulses

- <u>Labs</u>: baseline creatinine 1.9 mg/dL eGFR 25

- <u>Assessment</u>: critical limb ischemia

- <u>Plan</u>: left fem-pop bypass

# Left infra-inguinal bypass

The impact of heart failure specificity on <u>administrative data</u>

|  | LLE atherosclerosis with rest pain | + Heart failure (2/2) <br> + HTNsive heart disease with heart failure (2/2) <br> + COPD (1/2) | → Chronic systolic heart failure* (2/2) |
|---|---|---|---|
| GLOS | 2.3 days | 2.3 days →→→ | **4.1 days** |
| Severity of illness | 1 - Minor →→→ | **2 - Moderate** | 2 - Moderate |
| Risk of mortality | 1 - Minor →→→ | **2 - Moderate** | 2 - Moderate |

GLOS (geometric length of stay)        *Complication/comorbidity        **Major complication/comorbidity

# Risk-adjustment: heart failure
# Vascular quality database considerations

## Abstracted variable

- Congestive heart failure
  - None
  - History, asymptomatic
  - Symptomatic
    - Mild
    - Moderate
    - Severe

## Administrative data

→ Acute or Chronic

→ Systolic or Diastolic

VQI Cardiac Risk Index for prediction of MI after surgery.  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5079798/

Vascular Quality Initiative Risk Calculators. https://www.vqi.org/vqi-resource-library/vqi-risk-calculators-2/

# Left infra-inguinal bypass

The impact of abnormal baseline creatinine on <u>administrative data</u>

|  | LLE atherosclerosis w/rest pain<br>Chronic systolic heart failure* (2/2)<br>HTNsive heart disease (2/2)<br>COPD (1/2) | + Chronic kidney disease, stage 4* (2/3) |
|---|---|---|
| GLOS | 4.1 days | 4.1 days |
| Severity of illness | 2 - Moderate | 2 - Moderate |
| Risk of mortality | 2 - Moderate | **3 - Major** |

GLOS (geometric length of stay)       *Complication/comorbidity       **Major complication/comorbidity

# Risk-adjustment: abnormal renal function
# Vascular quality database considerations

## Abstracted variables

- Renal function
  - Creatinine ≤ 1.8 mg/dL
  - Creatinine > 1.8 mg/dL
    (renal insufficiency)
  - On dialysis

## Administrative data

→Chronic kidney disease . . .
  - Stage 3
  - Stage 4
  - Stage 5
  - End stage renal disease

VQI Cardiac Risk Index for prediction of MI after surgery.  https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5079798/

Vascular Quality Initiative Risk Calculators. https://www.vqi.org/vqi-resource-library/vqi-risk-calculators-2/

# Left infra-inguinal bypass

Baseline creatinine 1.9, rises to 2.9 on POD #1

Returned to baseline on POD #4

| | LLE atherosclerosis w/rest pain<br>Chronic systolic heart failure* (2/2)<br>HTNsive heart disease (2/2)<br>COPD (1/2)<br>Chronic kidney disease, stage 4* (2/3) | + Acute kidney injury* (3/3) |
|---|---|---|
| GLOS | 4.1 days | 4.1 days |
| Severity of illness | 2 - Moderate | **3 - Major** |
| Risk of mortality | 3 - Major | 3 - Major |

GLOS (geometric length of stay)       *Complication/comorbidity       **Major complication/comorbidity

# Risk-adjustment: worsening renal function
# Surgical quality database considerations

## Abstracted variables

- Vascular surgery (VQI)
  - Creatinine rise of > 0.5 mg/dL

- Cardiothoracic surgery (STS)
  - RIFLE: "failure criteria"

- Surgery (NSQIP)
  - Post-procedure
    - Increase SCr > 2 mg/dL
      - "progressive renal insufficiency"
    - New dialysis required – " acute renal failure"

## Administrative data

→ Acute kidney injury/Acute renal failure

KDIGO (Kidney Disease: Improving Global Outcomes)
  - Creatinine rise ≥ 0.3 mg/dL within 48 hours, or
  - Increase 1.5x the baseline

RIFLE (risk, injury, failure, loss, end-stage)
  - Risk: Increase 1.5x baseline
  - Injury: Increase 2x baseline
  - Failure: Increase 3x baseline or if baseline SCr ≥ 4 with an increase of at least > 0.5 mg/dL

# Case Example

**Right hemicolectomy**

# Right hemicolectomy

- <u>HPI</u>: 65 y.o. female presented with persistent RLQ pain and heme positive stools.  History significant for two hospitalizations in the last 3 months for acute on chronic diverticulitis.

- <u>ROS</u>: reduced appetite, 20 pound weight loss in 3 months (145 → 125)

- <u>Exam</u>: thin, weight 125 lbs, BMI 20.8, RLQ tenderness

- <u>Assessment</u>:  chronic smoldering diverticulitis

- <u>Plan</u>: right hemicolectomy

# Right hemicolectomy

The impact of nutritional diagnoses on the <u>administrative data</u>

The impact of malnutrition specificity

| | Chronic diverticulitis | + Abnormal weight loss (1/1) | → Malnutrition, unspecified* (3/2) | → Severe Malnutrition** (4/3) |
|---|---|---|---|---|
| Medicare GLOS | 3.7 days | 3.7 days | **6.2 days** | **10.8 days** |
| Severity of illness | 1 - Minor | 1 - Minor | **2 - Moderate** | **3 - Major** |
| Risk of mortality | 1 - Minor | 1 - Minor | 1 - Minor | **2 - Moderate** |

GLOS (geometric length of stay)        *Complication/comorbidity        **Major complication/comorbidity

## Abstracted variables

- Abnormal weight loss
  - Greater than 10% loss of body weight in the 6 months prior to surgery (unintentional)

ASPEN
http://www.nutritioncare.org/guidelines_and_clinical_resources/featured_articles/

GLIM: https://onlinelibrary.wiley.com/doi/full/10.1002/jpen.1440

Identification of Specific Quality Improvement Opportunities for the Elderly undergoing GI Surgery. Arch Surg. 2009,144(11):1013-1020.
https://jamanetwork.com/journals/jamasurgery/fullarticle/405458

## Administrative data

→ **Malnutrition** (intake, weight loss, exam findings)

A.S.P.E.N (Amer Soc for Parenteral and Enteral Nutrition)

| Non-severe | | Severe | |
|---|---|---|---|
| % Lost | Time | % Lost | Time |
| ≤ 5 | 1 mo | > 5 | 1 mo |
| ≤ 7.5 | 3 mo | > 7.5 | 3 mo |
| ≤ 10 | 6 mo | > 10 | 6 mo |
| ≤ 20 | 1 yr | > 20 | 1 yr |

GLIM (Global Leadership on Malnutrition)

| Moderate | | Severe | |
|---|---|---|---|
| % Lost | Time | % Lost | Time |
| 5-10 | 6 mo | > 10 | 6 mo |
| 10-20 | Beyond 6 mo | > 20 | Beyond 6 mo |
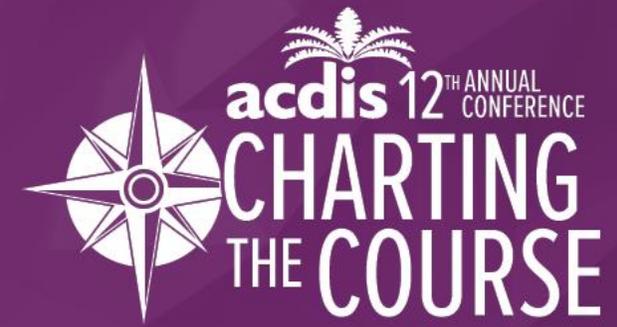
# Case Example

**Coronary artery bypass grafting with aortic valve replacement**

# CABG with AVR

- <u>HPI</u>: 70 y.o. male with HTN and CAD has dyspnea at rest due to aortic stenosis

- <u>Labs</u>: Hgb 12 Hct 36

- <u>Assessment</u>: Severe high-gradient aortic valve stenosis and CAD

- <u>Plan</u>: CABG with AVR

# CABG with AVR

After surgery . . .

the hematocrit drops to 23% and the patient is transfused blood

| | Atherosclerotic CAD Nonrheumatic aortic stenosis (1/2) Hypertension (1/1) | + Anemia (1/1) | → Post hemorrhagic anemia* (1/1) |
|---|---|---|---|
| GLOS | 4.2 days | 4.2 days | **6.1 days** |
| Severity of illness | 1 - Minor | 1 - Minor | 1 - Minor |
| Risk of mortality | 2 - Moderate | 2 - Moderate | 2 - Moderate |

GLOS (geometric length of stay)     *Complication/comorbidity     **Major complication/comorbidity

# Risk-adjustment: blood product utilization
# Society of thoracic surgery database considerations

## Abstracted variable

- Blood products – RBC Units (after surgery)
  - Started any time after the initial surgery

## Administrative data

→ Acute post-hemorrhagic anemia (acute blood loss anemia)

The Society of Thoracic Surgeons Adult Cardiac Surgery Data Collection
https://www.sts.org/registries-research-center/sts-national-database/adult-cardiac-surgery-database/data-collection

# Risk-adjustment for two important Major Complications/Comorbidities

**Acute respiratory failure**

**Sepsis**

# Risk-adjustment: reintubation or ventilator time Surgical quality database considerations

## Abstracted variable

- Cardiothoracic Surgery (STS)
  - Postop intubation or reintubation
  - Total postop ventilation hours > 24 is considered prolonged postop vent time

- Surgery (NSQIP)
  - Cumulative vent time > 48 hours

## Administrative data

→ Acute hypoxic/hypercarbic respiratory failure

The Society of Thoracic Surgeons Adult Cardiac Surgery Data Collection
https://www.sts.org/registries-research-center/sts-national-database/adult-cardiac-surgery-database/data-collection
NSQIP https://www.facs.org/~/media/files/quality%20programs/nsqip/nsqip_puf_userguide_2017.ashx

# Risk-adjustment: sepsis
# Surgical quality database considerations

## Abstracted variable

- Cardiothoracic Surgery (STS)
  - Time impacts assignment
    - < 48 hours: 2 SIRS + PROVEN infection
    - > 48 hours: 2 SIRS + SUSPECTED infection

- Surgery (NSQIP)
  - Added "anion gap acidosis" to SIRS criteria
  - 2 SIRS + infection (several scenarios)

**DOES NOT REQUIRE THE PROVIDER TO DOCUMENT SEPSIS IN ORDER TO ABSTRACT THE VARIABLE!!**

## Administrative data

→ Sepsis (severe sepsis)

→ Septic shock

ACS National Surgical Quality Improvement Program
https://www.facs.org/~/media/files/quality%20programs/nsqip/ug12.ash

The Society of Thoracic Surgeons Adult Cardiac Surgery Data Collection
https://www.sts.org/registries-research-center/sts-national-database/adult-cardiac-surgery-database/data-collection

# In Summary

- Be aware of the importance of abstracted quality databases

- Be fluent in the language of abstracted variables

- Be open to customizing your diagnostic thresholds

## Thank you. Questions?

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