Voluntary PVI Report Dictionary

Updated with Q4 2021 report release

Table of Contents

All Revascularizations

Patient Demographics

The demographic data listed below is reported at the discharge level, not at the procedure level.

Discharges

The total number of discharges containing a PVI procedure. The numerator and denominator are the same.

Average Age (stdev)

Calculates the average (mean) age of patients as of the admission date.

Male Gender

Numerator: The number of PVI discharges where the patient is male.

Denominator: The total number of PVI discharges.

Female Gender

Numerator: The number of PVI discharges where the patient is female.

Denominator: The total number of PVI discharges.

Ever Smoked

Numerator: The number of PVI discharges where the patient smoked at any time during their life.

Denominator: The total number of PVI discharges.

Current Smoker

Numerator: The number of PVI discharges where the patient smoked within 1 month prior to arrival to the hospital.

Denominator: The total number of PVI discharges.

Hypertension

Numerator: The number of PVI discharges where the patient has a history of hypertension.

Denominator: The total number of PVI discharges.

Hyperlipidemia

Numerator: The number of PVI discharges where the patient has a history of hyperlipidemia.

Denominator: The total number of PVI discharges.

Diabetes Mellitus

Numerator: The number of PVI discharges where the patient has a history of any type of diabetes.

Denominator: The total number of PVI discharges.

Cerebrovascular Disease (CVD)

Numerator: The number of PVI discharges where the patient has a history of Cerebrovascular Disease (CVD) or Transient Ischemic Attack (TIA).

Denominator: The total number of PVI discharges.

Coronary Artery Disease (CAD)

Numerator: The number of PVI discharges where the patient has a history of CAD.

Denominator: The total number of PVI discharges.

Congestive Heart Failure (CHF)

Numerator: The number of PVI discharges where the patient has a history of CHF or ischemic cardiomyopathy.

Denominator: The total number of PVI discharges.

Chronic Lung Disease (COPD)

Numerator: The number of PVI discharges where the patient has a history of Chronic Lung Disease (COPD).

Denominator: The total number of PVI discharges.

Renal Failure Currently Requiring Dialysis

Numerator: The number of PVI discharges where the patient is on dialysis as a result of renal failure.

Denominator: The total number of PVI discharges.

BMI (mean, stdev)

Calculates the average (mean) and standard deviation of BMI for each patient.

BMI is defined as the weight in kilograms (on the discharge record) divided by the square of the height in meters (on the discharge record).

Note that height is currently captured in centimeters.

Creatinine (pre) >=1.5

Numerator: The number of PVI discharges where the Pre Procedure Creatinine value is >= 1.5.

Denominator: The number of PVI discharges that have a value entered for Pre Procedure Creatinine.

Note: For discharges with multiple PVI procedures, the pre procedure creatinine values are taken from the first procedure within the discharge.

Anemia

Numerator: The number of PVI discharges that have a Pre Procedure hemoglobin below 13 for men and 12 for women.

Denominator: The number of PVI discharges that have a value for Pre Procedure Hemoglobin.

Note: For discharges with multiple PVI procedures, the pre procedure hemoglobin values are taken from the first

procedure within the discharge.

Reference: World Health Organization. Source http://en.wikipedia.org/wiki/Anemia.

Procedures

Data in this area are reported at the procedure level, rather than the discharge level. Each procedure may have more than one location.

Procedures/All revascularizations

The total number of PVI procedures. The numerator and denominator are the same.

Procedures/Lower Extremity

Numerator: The number of PVI procedures with at least one Vessel Location in X lower extremity artery.

Denominator: The total number of PVI procedures.

Procedures/Other arterial beds

Numerator: The number of PVI procedures with at least one Vessel Location in an X artery that is not in the lower extremity.

Denominator: The total number of PVI procedures.

Hybrid procedures

Numerator: The number of PVI procedures where a hybrid procedure was performed.

Denominator: The total number of PVI procedures.

Outcomes in Lab

Discharges

The total number of discharges containing a PVI procedure. The numerator and denominator are the same.

Death

Numerator: The number of PVI discharges where a death occurred during the PVI procedure.

Denominator: The total number of PVI discharges.

Transfusion

Numerator: The number of PVI discharges where a transfusion of PRBCs was given during a PVI procedure.

Denominator: The total number of PVI discharges.

Vascular Complications

Numerator: The number of PVI discharges where a vascular access complication occurred during a PVI procedure.

Denominator: The total number of PVI discharges.

Note: Multiple options may be selected.

Type of Vascular Complication

Numerator: The number of PVI discharges where X type of vascular access complication occurred during a PVI procedure.

Denominator: The number of PVI discharges where a vascular access complication occurred during a PVI procedure.

Perforation

Numerator: The number of PVI discharges where there was a vessel perforation during a PVI procedure.

Denominator: The total number of PVI discharges.

Treatment successful

Numerator: The number of PVI discharges where the vessel perforation was successfully treated during a PVI procedure.

Denominator: The number of PVI discharges where there was a vessel perforation during a PVI procedure.

Treatment unsuccessful

Numerator: The number of PVI discharges where the treatment of a vessel perforation was unsuccessful during a PVI procedure.

Denominator: The number of PVI discharges where there was a vessel perforation during a PVI procedure.

Vascular Surgery Emergent

Numerator: The number of PVI discharges where emergent vascular surgery was performed.
Denominator: The total number of PVI discharges.

Note: Emergent vascular surgery is defined as the patient needed to go to the operating room immediately from intervention room or there was a conversion to an unplanned open procedure.

Note: Multiple options may be selected.

Reason for Vascular Surgery Emergent

Numerator: The number of PVI discharges that had X reason for emergent vascular surgery.

Denominator: The number of PVI discharges where emergent vascular surgery was performed.

Note: Emergent vascular surgery is define as the patient needed to go to the operating room immediately from intervention room or there was a conversion to an unplanned open procedure

Outcomes Prior to Discharge

The outcome data listed below is reported at the discharge level, not at the procedure level.

Note: Discharges that contain multiple procedures/procedure types will have outcomes reported per discharge (any outcome in the discharge will appear on the report), not per procedure.

Discharges

The total number of discharges containing a PVI procedure. The numerator and denominator are the same.

Death

Numerator: The number of PVI discharges where a death occurred post procedure and before discharge.

Denominator: The total number of PVI discharges.

Myocardial Injury

Numerator: The number of PVI discharges Myocardial Injury post-procedure and before discharge.

Denominator: The total number of PVI discharges.

TIA/Stroke

Numerator: The number of PVI discharges where the patient had a TIA or stroke post procedure and before discharge.

Denominator: The total number of PVI discharges.

Dissection

Numerator: The number of PVI discharges where a dissection was not repaired during a PVI procedure.

Denominator: The total number of PVI discharges.

Embolus (distal to treated segment)

Numerator: The number of PVI discharges where the patient developed an embolus post procedure and before discharge.

Denominator: The total number of PVI discharges.

Thrombosis (at treated segment)

Numerator: The number of PVI discharges where a thrombus formed within the treated vessel post procedure and before discharge.

Denominator: The total number of PVI discharges.

Vascular Surgery Emergent

Numerator: The number of PVI discharges where emergent vascular surgery was performed post procedure and before discharge.

Denominator: The total number of PVI discharges.

Note: Multiple options may be selected.

Reason for Vascular Surgery Emergent

Numerator: The number of PVI discharges that had X reason that emergent vascular surgery was performed post procedure and before discharge.

Denominator: The total number of PVI discharges.

Vascular Surgery Non-Emergent

The numerator is the number of PVI discharges where the patient had an elective VS procedure 12 hours post procedure and before discharge.

Denominator: The total number of PVI discharges.

Infection/Sepsis

Numerator: The number of PVI discharges where the patient had positive cultures requiring treatment with antibiotics post procedure and before discharge.

Denominator: The total number of PVI discharges.

Nephropathy Requiring Dialysis

Numerator: The number of PVI discharges where the patient had acute or worsening renal failure, post procedure, that led to dialysis during the hospitalization.

Denominator: The total number of PVI discharges where the patient did not have dialysis due to renal failure post procedure and before discharge.

Contrast Induced Nephropathy

Numerator: The number of PVI discharges with CIN. CIN is defined as the peak post-procedure creatinine value minus the pre-procedure creatinine value of >= 0.5. If Not Drawn is entered for the peak post-procedure creatinine value, then the discharge or post-discharge creatinine value will be used in the calculation.

Denominator: The number of PVI discharges where a PVI procedure has CIN Potential. CIN Potential is calculated by excluding procedures without pre-procedure creatinine, post-procedure creatinine (Peak, Discharge, or Post Discharge) values.

Exclusions:

- history of renal failure currently requiring dialysis
- renal transplant
- death in OR

Vascular Access Complications

Numerator: The number of PVI discharges where a vascular access complication occurred post procedure and before discharge.

Denominator: The total number of PVI discharges.

Note: Multiple options may be selected.

Type of Vascular Access Complication

Numerator: The number of PVI discharges where X type of vascular access complication occurred post procedure and before discharge.

Denominator: The total number of PVI discharges.

Transfusion

Numerator: The number of PVI discharges where a transfusion of PRBCs was given post procedure and before discharge.

Denominator: The total number of PVI discharges.

Exclusion from numerator: PVI discharges that contain a hybrid PVI procedure and a transfusion of PRBCs was given post procedure and before discharge.

Post Procedure Length of Stay (mean, median, stdev)

The average (mean), median, and standard deviation of the post procedure length of stay. The post procedure length of stay is calculated as the date of discharge minus the procedure end date of the first PVI procedure within a discharge.

Note: In PVI, all length of stay calculations count a same-day discharge as a stay of 1 day.

Length of Stay (mean, median, stdev)

The average (mean), median, and standard deviation of length of stay for a PVI procedure. Length of stay is calculated as date of discharge minus the date of admission.

In PVI, all length of stay calculations count a same-day discharge as a stay of 1 day.

Amputation (planned)

Numerator: The number of PVI discharges where an amputation was performed post procedure and before discharge.

Denominator: The total number of PVI discharges.

Note: Multiple options may be selected.

Location of Amputation

Numerator: The number of PVI discharges with X location of amputation.

Denominator: The number of PVI discharges where an amputation was performed post procedure and before discharge.

Additional Quality Indicators

Discharge Medications

Discharges

The total number of discharges containing a PVI procedure. The numerator and denominator are the same.

ACE Inhibitor / ARB

Numerator: The number of PVI discharges where an ACE Inhibitor or an ARB was ordered or continued at discharge.

Denominator: The total number of PVI discharges.

Exclusions:

- A contraindication to an Ace Inhibitor or an ARB.
- Death during procedure or post procedure.

Anti-Platelets

Aspirin

Numerator: The number of PVI discharges where aspirin was ordered or continued at discharge.

Denominator: The total number of PVI discharges.

Exclusions:

- A contraindication to aspirin.
- Death during procedure or post procedure.

Any Anti-Platelet

Numerator: The number of PVI discharges where any of the following medications were prescribed or continued at discharge:

- Clopidogrel (Plavix)
- Prasugrel (Effient)
- Ticlopidine (Ticlid)
- Ticagrelor (Brilinta)
- Cilostazol (Pletal)

Denominator: The total number of PVI discharges.

Exclusions:

- Death during procedure or post procedure
- The patient was discharged to hospice, other acute care hospital, or left AMA
- A contraindication to both aspirin and clopidogrel and the patient did not receive another anti-platelet

Dual Anti-Platelet

Numerator: The number of PVI discharges where two or more of the following medications were prescribed or continued at discharge:

- Aspirin
- Clopidogrel (Plavix)

- Prasugrel (Effient)
- Ticlopidine (Ticlid)
- Ticagrelor (Brilinta)
- Cilostazol (Pletal)

Denominator: The total number of PVI discharges.

Exclusions:

- A contraindication to Aspirin or Clopidogrel (Plavix) Death
- during procedure or post procedure

Thienopyridines

Numerator: The number of PVI discharges where any of the following medications were prescribed or continued at discharge:

- Clopidogrel (Plavix)
- Prasugrel (Effient)
- Ticagrelor (Brilinta)

Denominator: The total number of PVI discharges.

Exclusions:

- A contraindication to Clopidogrel (Plavix)
- Death during procedure or post procedure.

Clopidogrel (Plavix)

Numerator: The number of PVI discharges where Clopidogrel (Plavix) was prescribed or continued at discharge.

Denominator: The total number of PVI discharges.

Exclusions:

- A contraindication to Clopidogrel (Plavix)
- Death during procedure or post procedure.

Prasugrel (Effient)

Numerator: The number of PVI discharges where Prasugrel (Effient) was prescribed or continued at discharge.

Denominator: The total number of PVI discharges.

Exclusions:

- Age is >/= 75 at admission
- Weight is </= 60 kg
- A history of stroke or other cerebrovascular disease
- Death during procedure or post procedure

Source: http://www.effienthcp.com/Pages/important-safety-information.aspx

Beta Blockers

Numerator: The number of PVI discharges where a Beta Blocker was prescribed or continued at discharge.

Denominator: The total number of PVI discharges.

Exclusions:

- A contraindication to Beta Blockers
- Death during procedure or post procedure.

Cholesterol Lowering Agents

Numerator: The number of PVI discharges where a statin and/or other cholesterol lowering agent was prescribed or continued at discharge.

Denominator: The total number of PVI discharges.

Exclusions:

- A contraindication to a statin and the statin was not prescribed or continued at discharge
- Death during procedure or post procedure.

Statin

Numerator: The number of PVI discharges where a statin was prescribed or continued at discharge.

Denominator: The total number of PVI discharges.

Exclusions:

- A contraindication to a statin and a statin was not prescribed or continued at discharge
- Death during procedure or post procedure.
- Discharge status of hospice, other acute care hospital, or left AMA

Other CLA

Numerator: The number of PVI discharges where a cholesterol lowering agent other than a statin was prescribed or continued at discharge.

Denominator: The total number of PVI discharges.

Exclusions: Death during procedure or post procedure.

Procedural Indicators

Procedures

The total number of PVI procedures. The numerator and denominator are the same.

Total Heparin dose (unit/kg) (mean, stdev)

Calculates the mean and standard deviation of the total heparin dose: The total heparin dose per procedure divided by the patient's weight in kilograms.

Note: If 0 was mistakenly entered for the weight, then the value for that procedure is 0. If heparin dose is "not documented" then the procedure is not included in the calculation.

Peak ACT (mean, stdev)

Calculates the mean and standard deviation of the recorded peak activated clotting time (ACT) in each PVI procedure.

Note: If Peak ACT is "not documented" then the procedure is not included in the calculation.

Peak ACT recorded

Numerator: The number of PVI procedures where a value was entered for Peak Activated Clotting Time (ACT).

Denominator: The total number of PVI procedures.

Contrast per Procedure (mean, stdev)

Calculates the mean and standard deviation of the Contrast Volume per procedure (mL). The mean here is the total contrast volume used in all PVI procedures, divided by the number of PVI procedures.

Note: If Total IV Contrast Used is "not documented" then the procedure is not included in the calculation.

Lesion Success

Numerator: The number of Locations which have a documented Post-Stenosis value of </= 30%. Entering Not crossed with a device = ND or Not crossed with a wire = NW into Locations excludes that Location from the numerator.

Denominator: The number of Locations which have a documented Post-Stenosis.

Technical Success

Numerator: The number of PVI procedures where *all* Locations have a technical success.

Denominator: The number of PVI procedures in which *all* locations have post-procedure stenosis documented.

Note: Technical success is defined as a location that has a documented post stenosis of </= 30% and the following are not entered:

 * Not crossed with a device = ND
 * Not crossed with a wire = NW

Procedural Success

Numerator: The number of PVI procedures that meet the following criteria:

 * All locations for each procedure have a documented post stenosis of </= 30% and the following are not entered:
   * Not crossed with a device = ND
   * Not crossed with a wire = NW
 * There is less than a 0.5 mg/dL increase of post procedure creatinine from pre-procedure creatinine.
 * Each procedure does not have intra op or post procedure outcomes except the following:
   * Stay in ICU
   * Respiratory (Vent cont. or Reintubation)
   * Dysrhythmia
   * CHF

- Infection/sepsis
        - New Requirement for Dialysis
        - Vascular Surgery Non Emergent
        - Amputation
    - Exclusions to the numerator:
        - history of renal failure currently requiring dialysis
        - renal transplant
        - death in OR
        - ruptured AAA
        - No value for pre-procedure creatinine
        - No value for peak post procedure creatinine, discharge creatinine, and post-discharge creatinine

Denominator: The number of PVI procedures in which *all* locations have post-procedure stenosis documented.

Discharges

The total number of discharges containing a PVI procedure. The numerator and the denominator are the same.

Smoking Cessation Counseling at DC (current smokers)

Numerator: The number of PVI discharges where the patient smoked within one month of the date of admission and the patient received a smoking cessation intervention during the hospitalization or at discharge.

Denominator: The total number of PVI discharges where the patient smoked within one month of the date of admission.

Note: Discharges are excluded if they are marked in any procedure as death in lab or death post procedure.

Exercise Counseling (all patients)

Numerator: The number of PVI discharges where the patient received exercise counseling.

Denominator: The total number of PVI discharges.

Note: Discharges are excluded if they are marked in any procedure as death in lab or death post procedure.

Transfusions and Vascular Complications

Discharges

The total number of discharges containing a PVI procedure. The numerator and denominator are the same.

Hybrid Discharges

Numerator: The number of PVI discharges in which at least one PVI procedure was a hybrid procedure.

Denominator: The total number of PVI discharges.

Transfusion

Numerator: The number of PVI discharges in which a transfusion of PRBCs was given post procedure.

Denominator: The total number of PVI discharges.

Note: Hybrid PVI procedures are excluded from the numerator.

Hybrid discharges with transfusion

Numerator: The number of PVI discharges that had at least one hybrid PVI procedure where a Transfusion of PRBCs was given post procedure for any procedure of any type.

Denominator: The number of PVI discharges that had at least one hybrid PVI procedure.

Pre-procedure Hemoglobin

Numerator: The number of PVI discharges that have a pre-procedure hemoglobin value for the first procedure.

Denominator: The total number of PVI discharges.

Anemia

Numerator: The number of PVI discharges that have a pre-procedure hemoglobin value for the first procedure that is below 13 for men, and below 12 for women.

Denominator: The total number of PVI discharges that have a pre-procedure hemoglobin value for the first procedure.

Reference: http://en.wikipedia.org/wiki/Anemia

Pre-procedure Hemoglobin (mean, stdev)

The mean and standard deviation of the pre-procedure hemoglobin value for the first procedure.

Nadir Hemoglobin (mean, stdev)

The mean and standard deviation of the nadir hemoglobin for all PVI procedures.

BMI

Overall

The average (mean) and standard deviation Body Mass Index (BMI) for each PVI discharge.

BMI is defined as the weight in kilograms (on the discharge record) divided by the square of the height in meters (on the discharge record).

Note that height is currently captured in centimeters.

Patients with vascular complication (mean, stdev)

The average (mean) and standard deviation Body Mass Index (BMI) for each PVI discharge that had a vascular complication.

BMI is defined as the weight in kilograms (on the discharge record) divided by the square of the height in meters (on the discharge record).

Note that height is currently captured in centimeters.

Vascular Access Complications

Numerator: The number of PVI discharges that had a post procedure vascular access complication.

Denominator: The total number of PVI discharges.

Note: Multiple options may be selected.

Type of Vascular Access Complication

Numerator: The number of PVI discharges that had X Vascular Access Complication post procedure.

Denominator: The total number of PVI discharges.

Procedures

The total number of PVI procedures. The numerator and denominator is the same.

Vascular Access Approach

Antegrade

Numerator: The number of PVI procedures in which at least one of the vascular access sites had an antegrade access approach.

Denominator: The total number of PVI procedures.

Retrograde

Numerator: The number of PVI procedures in which at least one of the vascular access sites had a retrograde access approach.

Denominator: The total number of PVI procedures.

Both

Numerator: The number of PVI procedures in which at least one of the vascular access sites used both a antegrade and retrograde access approach.

Denominator: The total number of PVI procedures.

Procedures with multiple access sites

Numerator: The number of PVI procedures that have more than one Vascular Access Site entered.

Denominator: The total number of PVI procedures.

Vascular Access Site

Numerator: The number of PVI procedures with at least one Vascular Access Site in X artery.

Denominator: The total number of PVI procedures.

Procedure Medications

Total Heparin dose (unit/kg) (mean, stdev)

Calculates the mean and standard deviation of the total heparin dose: The total heparin dose per procedure divided by the patient's weight in kilograms.

Note: If heparin dose is "not documented" then the procedure is not included in the calculation.

Peak ACT (mean, stdev)

Calculates the mean and standard deviation of the recorded peak activated clotting time (ACT) in each PVI procedure.

Note: If Peak ACT is "not documented" then the procedure is not included in the calculation.

Peak ACT recorded

Numerator: The number of PVI procedures that have a value entered for Peak Activated Clotting Time (ACT).

Denominator: The total number of PVI procedures.

Reversed with Protamine

Numerator: The number of PVI procedures in which protamine was given during the procedure.

Denominator: The total number of PVI procedures.

Received lytics

Numerator: The number of PVI procedures where Lysis is entered as the PVI Procedure Performed or any one of the following medications is marked as given at any timeframe (pre/during/post)

- Tissue Plasminogen Activator (TPA)
- Tenecteplase (TNK)
- Retavase (rPA)

Denominator: The total number of PVI procedures.

Contrast Induced Nephropathy

Discharges

The total number of discharges containing a PVI procedure. The numerator and denominator are the same.

CIN Potential

Numerator: The number of PVI discharges. PVI procedures that meet all of the following criteria are excluded from the numerator:

- No pre-procedure creatinine value
- No post-procedure creatinine (Peak, Discharge, or Post Discharge) values
- A history of
  - renal transplant
  - kidney failure
  - death in the OR
  - indication of renal salvage

Denominator: The total number of PVI discharges.

Contrast Induced Nephropathy

CIN is defined as a > 0.5 mg/dL increase of post procedure creatinine from pre-procedure creatinine.

Numerator: The number of PVI discharges that have increase of post procedure creatinine of >0.5 mg/dL.

Denominator: The number of PVI discharges.

Exclusions:

- history of renal failure currently requiring dialysis
- renal transplant
- death in the lab
- indication of renal salvage
- No value for pre-procedure creatinine
- No value for peak post procedure creatinine, discharge creatinine, or post-discharge creatinine

Nephropathy Requiring Dialysis

Numerator: The number of PVI discharges where the patient had acute or worsening renal failure, post procedure, that led to dialysis during the hospitalization.

Denominator: The total number of PVI discharges where the patient did not have dialysis due to renal failure post procedure and before discharge.

Contrast per Procedure (mean, stdev)

Calculates the mean and standard deviation of the Contrast Volume per procedure (mL). The mean here is the total contrast volume used in all PVI procedures, divided by the number of PVI procedures.

Note: If Total IV Contrast Used is "not documented" then the procedure is not included in the calculation.

Contrast Types

Numerator: The number of PVI discharges in which, in at least one procedure of any type, X Contrast Type was used.

Denominator: The total number of PVI discharges.

Contrast per Discharge (mean, stdev)

Calculates the mean and standard deviation of the "Total IV Contrast Dose" for the entire discharge. All "Total IV Contrast Dose" values are added for all procedures (regardless of type). Considers all PVI discharges.

High Risk Patients

Creatinine >= 1.5 (pre 1st procedure)

CIN is defined as a > 0.5 mg/dL increase of post procedure creatinine from pre-procedure creatinine.

Numerator: The number of PVI discharges where the pre procedure creatinine value for the first PVI procedure is >= 1.5.

Exclusions from the numerator:

- history of renal failure currently requiring dialysis
- renal transplant
- death in the lab
- indication of renal salvage
- No value for pre-procedure creatinine
- No value for peak post procedure creatinine, discharge creatinine, or post-discharge creatinine

Denominator: The number of PVI procedures that have a pre procedure creatinine value entered for the first PVI procedure and meet the following criteria:

- A post-procedure creatinine (Peak, Discharge, or Post Discharge) value is entered into the website
- The patient does not have a history of renal transplant or kidney failure
- The patient did not die during the PVI
- The PVI was not performed for the indication of renal salvage

CIN with pre-creatinine >=1.5

CIN is defined as a > 0.5 mg/dL increase of post procedure creatinine from pre-procedure creatinine.

Numerator: The number of PVI discharges where the pre procedure creatinine value for the first PVI procedure is >= 1.5.
Exclusions from the numerator:

- history of renal failure currently requiring dialysis
- renal transplant
- death in the lab
- indication of renal salvage
- No value for pre-procedure creatinine
- No value for peak post procedure creatinine, discharge creatinine, or post-discharge creatinine

Denominator: The number of PVI procedures where the pre procedure creatinine value for the first PVI procedure is >= 1.5 and meet the following criteria:

- A post-procedure creatinine (Peak, Discharge, or Post Discharge) value is entered into the website
- The patient does not have a history of renal transplant or kidney failure
- The patient did not die during the PVI
- The PVI was not performed for the indication of renal salvage

NRD with pre-creatinine >=1.5

Numerator: The number of PVI discharges that have a pre procedure creatinine value for the first PVI procedure is >= 1.5 AND the patient had acute or worsening renal failure, post procedure, that led to dialysis during the hospitalization

Denominator: The number of PVI discharges where the pre procedure creatinine value for the first PVI procedure is >= 1.5.

Exclusions from the denominator:

- history of renal failure currently requiring dialysis
- renal transplant
- death in the lab
- indication of renal salvage
- No value for pre-procedure creatinine
- No value for peak post procedure creatinine, discharge creatinine, or post-discharge creatinine

GFR of patients with pre-creatinine >=1.5 (mean, stdev)

Calculates (at each procedure level) the mean and standard-deviation of the eGFR for those patients that had a pre-procedure creatinine >= 1.5 prior to the first PVI.

References

eGFR calculator https://qxmd.com/calculate/calculator_251/egfr-using-ckd-epi

Levey, A. S., Stevens, L. A., Schmid, C. H., Zhang, Y. L., Castro, A. F., 3rd, Feldman, H. I., Kusek, J. W., Eggers, P., Van Lente, F., Greene, T., Coresh, J., & CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration) (2009). A new equation to estimate glomerular filtration rate. *Annals of internal medicine*, *150*(9), 604–612. https://doi.org/10.7326/0003-4819-150-9-200905050-00006

eGFR < 60

Numerator: The number of PVI discharges that have an eGFR less than 60 in any PVI procedure.

The denominator is the total number of PVI discharges.

References

eGFR calculator https://qxmd.com/calculate/calculator_251/egfr-using-ckd-epi

Levey, A. S., Stevens, L. A., Schmid, C. H., Zhang, Y. L., Castro, A. F., 3rd, Feldman, H. I., Kusek, J. W., Eggers, P., Van Lente, F., Greene, T., Coresh, J., & CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration) (2009). A new equation to estimate glomerular filtration rate. *Annals of internal medicine*, *150*(9), 604–612. https://doi.org/10.7326/0003-4819-150-9-200905050-00006

CIN with eGFR < 60

Numerator: The number of PVI discharges in where the eGFR is less than 60 for any PVI procedure AND there is an increase of post procedure creatinine of >0.5 mg/dL.

Denominator: The total number of PVI discharges where the eGFR is less than 60 for any PVI procedure.

Exclusions:

- No pre-procedure creatinine value
- No post-procedure creatinine (Peak, Discharge, or Post Discharge) values
- history of renal failure currently requiring dialysis
- renal transplant

- Death in the lab
- Indication of renal salvage

NRD with eGFR < 60

Numerator: The number of PVI discharges where the patient had acute or worsening renal failure, post procedure, that led to dialysis during the hospitalization AND the eGFR is less than 60 for any PVI procedure.

Denominator: The total number of PVI discharges where the eGFR is less than 60 for any PVI procedure.

Exclusions from the denominator:

- No pre-procedure creatinine value
- No post-procedure creatinine (Peak, Discharge, or Post Discharge) values
- history of renal failure currently requiring dialysis
- renal transplant
- Death in the lab
- Indication of renal salvage

Baseline eGFR

Numerator: The number of PVI discharges where the first PVI procedure has an eGFR that is within X range.

Denominator: The total number of PVI discharges.

References

eGFR calculator https://qxmd.com/calculate/calculator_251/egfr-using-ckd-epi

Levey, A. S., Stevens, L. A., Schmid, C. H., Zhang, Y. L., Castro, A. F., 3rd, Feldman, H. I., Kusek, J. W., Eggers, P., Van Lente, F., Greene, T., Coresh, J., & CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration) (2009). A new equation to estimate glomerular filtration rate. *Annals of internal medicine*, *150*(9), 604–612. https://doi.org/10.7326/0003-4819-150-9-200905050-00006

Post Creatinine Drawn - High Risk Patients (PVI)

Numerator: The number of PVI discharges that have a pre-procedure creatinine >=1.5 for the first PVI procedure AND the patient is not on dialysis pre-procedure as a result of renal failure.

Exclusions to the numerator:

- No post procedure creatinine value (Post procedure Peak Cr, DC Cr, Post DC Cr)
- Death in lab
- Non contrast was given during the PVI
- CO2 was the only contrast type used

Denominator: The number of PVI discharges in which the first PVI has a pre-procedure creatinine >=1.5 AND the patient is not on dialysis pre-procedure as a result of renal failure.

Exclusions to the denominator:

- Death in lab
- No contrast was given during the PVI
- CO2 was the only contrast type used.

Pre Procedure Hydration - High Risk Patients (PVI)

Numerator: The number of PVI discharges where the pre-procedure creatinine value is >=1.5 for the first PVI procedure, the patient is not on dialysis pre-procedure and the patient received IV fluids pre-procedure.

Denominator: The number of PVI discharges where the pre procedure creatinine value for the first PVI procedure is >= 1.5.

Exclusions from the denominator:

- history of renal failure currently requiring dialysis
- renal transplant
- death in the lab
- indication of renal salvage
- No value for pre-procedure creatinine
- No value for peak post procedure creatinine, discharge creatinine, or post-discharge creatinine

Pre Procedure Hydration by eGFR

Numerator: The number of PVI discharges in which the eGFR is in X range and the patient received pre-procedure IV fluids.

Denominator: The number of PVI discharges in which the eGFR is in X range

Ratio of Contrast Volume to eGFR

The ratio of contrast volume to eGFR is calculated at the procedure level. This ratio is calculated by dividing the contrast volume by the eGFR.

Exclusions:

- The patient is on dialysis pre-procedure for renal failure
- No pre-procedure creatinine value
- The contrast volume was not entered

Interpretation example:
Contrast dose=150ml   eGFR=50   would equal ratio of three
Contrast dose=100 ml eGFR=50 would equal ratio of two
A lower ratio is more desirable than a higher ratio. Higher ratio is associated with higher incidence of CIN.

References
eGFR calculator https://qxmd.com/calculate/calculator_251/egfr-using-ckd-epi

Levey, A. S., Stevens, L. A., Schmid, C. H., Zhang, Y. L., Castro, A. F., 3rd, Feldman, H. I., Kusek, J. W., Eggers, P., Van Lente, F., Greene, T., Coresh, J., & CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration) (2009). A new equation to estimate glomerular filtration rate. *Annals of internal medicine*, *150*(9), 604–612. https://doi.org/10.7326/0003-4819-150-9-200905050-00006

Ratio of Contrast Volume to GFR=2-3

Numerator: The number of PVI procedures where the ratio of contrast volume to eGFR = 2-3. (Significant Risk of CIN).

Denominator: The total number of PVI procedures.

Exclusions to the denominator:

- The patient is on dialysis pre-procedure for renal failure
- No pre-procedure creatinine value
- The contrast volume was not entered

The ratio of contrast volume to eGFR is calculated at the procedure level. This ratio is calculated by dividing the contrast volume by the eGFR.

Interpretation example:
Contrast dose=150ml   eGFR=50   would equal ratio of three
Contrast dose=100 ml eGFR=50 would equal ratio of two
A lower ratio is more desirable than a higher ratio. Higher ratio is associated with higher incidence of CIN.

References
eGFR calculator https://qxmd.com/calculate/calculator_251/egfr-using-ckd-epi

Levey, A. S., Stevens, L. A., Schmid, C. H., Zhang, Y. L., Castro, A. F., 3rd, Feldman, H. I., Kusek, J. W., Eggers, P., Van Lente, F., Greene, T., Coresh, J., & CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration) (2009). A new equation to estimate glomerular filtration rate. *Annals of internal medicine*, *150*(9), 604–612. https://doi.org/10.7326/0003-4819-150-9-200905050-00006

Ratio of Contrast Volume to GFR => 3

Numerator: The number of PVI procedures where the ratio of contrast volume to eGFR >3. (Substantial Risk of CIN).

Denominator: The total number of PVI procedures.

Exclusions to the denominator:

- The patient is on dialysis pre-procedure for renal failure
- No pre-procedure creatinine value
- The contrast volume was not entered

The ratio of contrast volume to eGFR is calculated at the procedure level. This ratio is calculated by dividing the contrast volume by the eGFR.

Interpretation example:
Contrast dose=150ml   eGFR=50   would equal ratio of three
Contrast dose=100 ml eGFR=50 would equal ratio of two
A lower ratio is more desirable than a higher ratio. Higher ratio is associated with higher incidence of CIN.

References
eGFR calculator https://qxmd.com/calculate/calculator_251/egfr-using-ckd-epi

Levey, A. S., Stevens, L. A., Schmid, C. H., Zhang, Y. L., Castro, A. F., 3rd, Feldman, H. I., Kusek, J. W., Eggers, P., Van Lente, F., Greene, T., Coresh, J., & CKD-EPI (Chronic Kidney Disease Epidemiology Collaboration) (2009). A new equation to estimate glomerular filtration rate. *Annals of internal medicine*, *150*(9), 604–612. https://doi.org/10.7326/0003-4819-150-9-200905050-00006

Exclusions

Discharges

The total number of PVI discharges. The numerator and denominator are the same.

CIN Potential

Numerator: The number of PVI discharges. PVI procedures that meet all of the following criteria are excluded from the numerator:

- No pre-procedure creatinine value
- No post-procedure creatinine (Peak, Discharge, or Post Discharge) values
- A history of
    - renal transplant
    - kidney failure
    - death in the OR
    - indication of renal salvage

Denominator: The total number of PVI discharges.

Contrast Induced Nephropathy

CIN is defined as a > 0.5 mg/dL increase of post procedure creatinine from pre-procedure creatinine.

Numerator: The number of PVI discharges that have increase of post procedure creatinine of >0.5 mg/dL.

Denominator: The number of PVI discharges.

Exclusions:

- history of renal failure currently requiring dialysis

renal transplant
- death in the lab
- indication of renal salvage
- No value for pre-procedure creatinine
- No value for peak post procedure creatinine, discharge creatinine, or post-discharge creatinine

Excluded Patients

Hx Renal Failure req Dialysis

Numerator: The number of PVI discharges where the patient is on dialysis for renal failure pre-procedure.

Denominator: The total number of PVI discharges.

Renal Transplant

Numerator: The number of PVI discharges where the patient has a history of a renal transplant, including failed transplants.

Denominator: The total number of PVI discharges.

Renal Salvage

Numerator: The number of PVI discharges that have at least one PVI procedure that was performed to improve renal function or delay the start of dialysis.

Denominator: The total number of PVI discharges.

Excluded Patients without Labs

Missing Creatinine (pre)

Numerator: The number of PVI discharges where there is no value for Pre Procedure Creatinine for any PVI procedure.

Denominator: The total number of PVI discharges.

Missing Creatinine (post)

Numerator: The number of PVI discharges that do not have a value for Discharge Creatinine and Post Discharge Creatinine, and Post Procedure Creatinine for any PVI procedure.

Denominator: The total number of PVI discharges.

Same day discharge

Numerator: The number of PVI discharges that do not have a Post Procedure Peak Creatinine value for any PVI procedure AND the Post Procedure LOS is 1 day.

Denominator: The number of PVI discharges that do not have a Post Procedure Peak Creatinine value for any PVI procedure.

Next day discharge

Numerator: The number of PVI discharges that do not have a Post Procedure Peak Creatinine value for any PVI procedure AND the Post Procedure LOS is 2 days.

Denominator: The number of PVI discharges that do not have a Post Procedure Peak Creatinine value for any PVI procedure.

Length of Stay (mean, median, stdev)

In PVI, all length of stay calculations count a same-day discharge as a stay of 1 day.
Computes the mean, median, and standard deviation of the number of days a patient was hospitalized. Computed as the discharge date minus the admission date, plus one day.

All patients

In PVI, all length of stay calculations count a same-day discharge as a stay of 1 day. LOS is calculated as the discharge date minus the admission date, plus one day.

Computes the mean, median, and standard deviation of the number of days a patient was hospitalized for all patients.

CIN - all patients

In PVI, all length of stay calculations count a same-day discharge as a stay of 1 day. LOS is calculated as the discharge date minus the admission date, plus one day.

Computes the mean, median, and standard deviation of the number of days a patient was hospitalized for all patients who have a >/= 0.5 mg/dL increase of post procedure creatinine from pre-procedure creatinine.

Exclusions:

- the patient is on dialysis for renal failure pre procedure
- renal transplant
- death in the lab
- indication of renal salvage
- No value for pre-procedure creatinine
- No value for peak post procedure creatinine, discharge creatinine, or post-discharge creatinine

CIN - high-risk patients

In PVI, all length of stay calculations count a same-day discharge as a stay of 1 day. LOS is calculated as the discharge date minus the admission date, plus one day.

Computes the mean, median, and standard deviation of the number of days a patient was hospitalized for patients who have a pre-procedure creatinine >/=1.5 and a >/= 0.5 mg/dL increase of post procedure creatinine from pre-procedure creatinine.

Exclusions:

- the patient is on dialysis for renal failure pre procedure
- renal transplant
- death in the lab
- indication of renal salvage
- No value for pre-procedure creatinine
- No value for peak post procedure creatinine, discharge creatinine, or post-discharge creatinine

No CIN - high-risk patients

In PVI, all length of stay calculations count a same-day discharge as a stay of 1 day. LOS is calculated as the discharge date minus the admission date, plus one day.

Computes the mean, median, and standard deviation of the number of days a patient was hospitalized for patients who have a pre-procedure creatinine >/=1.5 and a < 0.5 mg/dL increase of post procedure creatinine from pre-procedure creatinine.

Exclusions:

- the patient is on dialysis for renal failure pre procedure
- renal transplant
- death in the lab
- indication of renal salvage
- No value for pre-procedure creatinine
- No value for peak post procedure creatinine, discharge creatinine, or post-discharge creatinine

NRD

In PVI, all length of stay calculations count a same-day discharge as a stay of 1 day. LOS is calculated as the discharge date minus the admission date, plus one day.

Computes the mean, median, and standard deviation of the number of days a patient was hospitalized for patients who had acute or worsening renal failure, post procedure, that led to dialysis during the hospitalization.

Graphs

Each graphs will be a bar plot. On the x axis, each hospital is listed. On the y axis, X metric is listed.

The hospitals on the report graphs are blinded, meaning they are not listed by their hospital code number. For convenience, we also color the bar representing the specific hospital that pertains to that report.

If the metric has a goal, a horizontal line will be drawn on the graph to indicate where the goal lies.

Percentage of Vascular Complications - Goal ≤ 3%

For each hospital, compute the percentage of discharges that had *any* Vascular Access Complication. This is the same definition for Vascular Access Complications on the Transfusions and Vascular Complications page.

Goal - ≤ 3%

Percentage of Post-Procedure Transfusions - Goal ≤ 6%

For each hospital, compute the number of discharges in which a transfusion of PRBC was given post procedure. This is the same definition for Transfusion on the Outcomes Prior to Discharge page.

Goal - ≤ 6%

Percentage of Contrast Induced Nephropathy - Goal ≤ 4%

For each hospital, compute the percentage of discharges which had Contrast Induced Nephropathy. This is the same definition for Contrast Induced Nephropathy on the Outcomes Prior to Discharge page.

Percentage of Statin at Discharge - Goal ≥ 80%

For each hospital, compute the percentage of discharges in which Statin was given post-procedure after the *last* procedure of *any* type. This is the same as definition for Statin on the Discharge Medications page.

Goal - ≥ 80%

Percentage of Any Anti-Platelet at Discharge - Goal ≥ 95%

For each hospital, compute the number of discharges in which any anti-platelet was given post-procedure after the *last* procedure of *any* type. This is the same definition for Any Anti-Platelet on the Discharge Medications page.

Goal - ≥ 95%

Percentage of Pre Procedure Hydration - High Risk Patients (PVI)

For each hospital, compute the percentage of discharges containing a PVI with a pre procedure creatinine >/=1.5 that had pre procedure hydration. This is the same as the definition for Pre Procedure Hydration - High Risk Patients (PVI) on the Contrast Induced Nephropathy page.

Percentage of Post Creatinine Drawn - High Risk Patients (PVI) - Goal ≥ 75%

For each hospital, compute the percentage of discharges containing a PVI with a pre procedure creatinine >/=1.5 that had a post creatinine drawn. This is the same as the definition for Post Creatinine Drawn - High Risk Patients (PVI) on the Contrast Induced Nephropathy page.

Goal ≥ 75%