Vascular Surgery Data Dictionary

Blue Cross Blue Shield of Michigan
Vascular Surgery Registry
Data Collection Definitions

Definitions updated 2.1.2023

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Procedure Information

Physician

Data Abstraction Instructions:

Choose the attending physician from the drop down list or create a physician identification if not already listed.

Selections:

- Choose physician

Supporting Definitions:

If physician is not available in the drop down, enter the physician's information to create a physician ID.

Required:
Yes

Fellow ID/Second Operator

Data Abstraction Instructions:

Use the drop down box to choose a physician. If not available in drop down, enter the fellow's or second operator's information to create a physician ID.

Selections:

- Enter Fellow ID/Second Operator

Supporting Definitions:

This is an optional field if your site chooses to track it's fellows or second operators.

Required:
No

Procedure Date & Start Time

Data Abstraction Instructions:

Enter the date of the current procedure (mm/dd/yyyy) and enter the time the procedure was initiated. (Military time)

Selections:

- Enter Date & Time

Supporting Definitions:

The time the procedure started is defined as the time which local anesthetic was first administered for vascular access, or the time of the first attempt at vascular access for the peripheral intervention (use whichever is earlier), or incision time for open vascular surgery procedures. Indicate the time (hours: minutes) using military 24-hour clock, beginning at midnight (0000 hours). If an arterial sheath is already in place, use the time of the introduction of a catheter or the time the sheath was exchanged.

Required:
Yes

Procedure End Date & Time

Data Abstraction Instructions:

Enter the date and time the procedure ends.

Selections:

- Enter Date & Time

Supporting Definitions:

The time the procedure ended is defined as the time the primary operator leaves the room for peripheral interventions. End time for open surgical procedures is defined as the time when all instrument and sponge counts are completed; all dressings and drains are secured; and the physicians/surgeons have completed all procedure-related activities on the patient. Should the patient expire in the procedure area, indicate the time the patient was pronounced. Indicate the time (hours: minutes) using military 24-hour clock, beginning at midnight (0000 hours).

Required:
Yes

Status of Procedure

Data Abstraction Instructions:

Indicate status of the procedure using the following categories.

Selections:

- Elective
- Urgent
- Emergent

Supporting Definitions:

Elective = the procedure could be deferred without increased risk of compromised vascular outcome. This should include the planned or scheduled procedures.

Urgent = required operation within 72 hours, but > 12 hours of **admission.**

Emergent = required operation within 12 hours of **admission** to prevent limb loss.

Required:
Yes

Staged Procedure

Data Abstraction Instructions:

Indicate if the intervention is the part of a staged procedure.

Selections:

- Yes
- No

Supporting Definitions:

Interventions planned for subsequent procedures at the time of the initial procedure are considered staged procedure, e.g., initial procedure left superficial femoral angioplasty (SFA) with a plan for right SFA in future. Patients undergoing lysis procedures are considered staged procedures. A plan for a staged procedure can be developed with the patient as an outpatient or an inpatient. Enter a new case for any staged procedure (For the first case, mark No for staged procedure, for the second procedure mark Yes).

The following are NOT staged procedures: a subsequent intervention due to restenosis, a diagnostic angiogram with intervention planned on a separate day, a coronary procedure followed by a peripheral procedure, a return attempt after a failed PVI.

Required:
Yes

Consultations

Data Abstraction Instructions:

Indicate whether the patient had any of the following physician consultations within the last 6 months up to the date of procedure. These consults are done in anticipation of a pending procedure.

Selections:

- Cardiology Consultation
  - Yes
  - No
- Pulmonology Consultation
  - Yes
  - No
- Primary Care/Internal Medicine
  - Yes
  - No
- Hematology Consultation
  - Yes
  - No
- Renal Consultation
  - Yes
  - No

Supporting Definitions:

Choose all that apply.

If a consultation is ordered before the procedure, but the patient was seen after the procedure, you can still claim it as a pre-procedure consultation. Post procedure consults do not qualify.

For discharges with multiple procedures, consults should only be applied to procedures which they immediately precede (they do not apply to all procedures within the hospitalization). For example, a cardiac consult followed by two procedures: procedure # 1consult = yes, procedure #2 consult = no.

Required:
Yes

Imaging Studies (w/in past 6 months)

Data Abstraction Instructions:

For each of the listed studies, indicate if the study was performed to diagnose PAD, CAD, or as part of a functional assessment within prior 6 months. Also, for each of the listed studies that were performed, indicate if the study was normal or abnormal or include value where applicable. If study was not performed, record the study was not done.

For patients who have multiple procedures during the same hospitalization, do not use the same pre-procedure imaging studies as used prior to the first procedure. Only enter imaging studies performed prior to the specific procedure being entered.

Enter all available data for ABIs, TBIs, and toe pressures that are valid for the present procedure (include both right and left, regardless of the operative side).

When you enter Yes for Vein Mapping the Minimal Vein Graft Diameter will display. Enter the minimal vein graft diameter. Values can be found in duplex venous imaging pre-operatively or dictated by the physician. If the minimal vein graft diameter is not recorded, enter Not documented.

For Chest X-Ray enter the documentation of the physical condition of the lungs. For example, if the radiologist documents that an ET tube is in place and there are no structural abnormalities noted in the lungs. Enter Normal.

Selections:

- ABI's Compressible (Compressible </= 1.4)
  - Yes
  - No
- Right Pre Procedure ABI
  - Yes, enter value
  - No
- Left Pre Procedure ABI
  - Yes, enter value
  - No
- Right Pre Procedure TBI
  - Yes, enter value
  - No
- Left Pre Procedure TBI
  - Yes, enter value
  - No
- Right Pre Procedure Toe Pressure
  - Yes, enter value (mm Hg)
  - No
- Left Pre Procedure Toe Pressure
  - Yes, enter value (mm Hg)
  - No
- Vein Mapping
  - Yes
    - Minimal Vein Graft Diameter: mm
    - Not documented
  - No
- Duplex Ultrasound
  - Yes
    - Normal
    - Abnormal
  - No
- Computerized Tomographic Angiography (CTA)
  - Yes
    - Normal
    - Abnormal
  - No
- Magnetic Resonance Imaging/Magnetic Resonance Angiography (MRI/MRA)
  - Yes
    - Normal
    - Abnormal
  - No
- Contrast Cineangiography
  - Yes
    - Normal
    - Abnormal
  - No
- Cardiac Stress Test
  - Yes
    - Normal
    - Abnormal
  - No
- Electrocardiogram
  - Yes
    - Normal
    - Abnormal
  - No
- Chest X-Ray
  - Yes
    - Normal
    - Abnormal
  - No

Required:

Yes

Labs - Pre Procedure

Pre Procedure Creatinine

Data Abstraction Instructions:

Enter the creatinine value documented within the 30 days before the current procedure. If more than one creatinine value is documented, enter the value that is closest to the procedure start time. If there is no value, enter Not drawn.

If a patient has multiple procedures within a hospitalization, the pre-procedure labs should be abstracted after the previous procedure. If no labs are drawn from the end of the previous procedure to the start of the current procedure, enter "Not drawn".

The range for Pre Procedure Creatinine is 0.1 - 15 mg/dL. Enter 0.1 for a Pre Procedure Creatinine this is <0.1. Enter 15 for a Pre Procedure Creatinine that is >15.

Selections:

- Yes
  - Enter value mg/dl
- Not drawn

Required:
Yes
Suffix:
mg/dl
Minimum:
0.1
Maximum:
15
Soft Minimum:
0.3

Pre Procedure Hemoglobin (Hgb)

Data Abstraction Instructions:

Enter the hemoglobin value documented within the 30 days before the current procedure. If more than one hemoglobin value is documented, enter the value that is closest to the procedure start time. If there is no value, mark "Not drawn."

If a patient has multiple procedures within a hospitalization, the pre-procedure labs should be abstracted after the previous procedure. If no labs are drawn from the end of the previous procedure to the start of the current procedure, enter "Not drawn".

The Pre Procedure Hemoglobin range is 2 - 20 g/dL. Enter 2 for a hemoglobin value <2. Enter 20 for a hemoglobin value >20.

Selections:

- Yes
  - Enter value g/dl
- Not drawn

Required:
Yes
Suffix:
g/dl
Minimum:
2
Maximum:
20
Soft Minimum:
5
Soft Maximum:
18

Pre Procedure BNP

Data Abstraction Instructions:

Enter the BNP value documented within the 30 days before the current procedure. If more than one BNP value is documented, enter the value that is closest to the procedure start time. If there is no value, enter not drawn.

If a patient has multiple procedures within a hospitalization, the pre-procedure labs should be abstracted after the previous procedure. If no labs are drawn from the end of the previous procedure to the start of the current procedure, enter "Not drawn".

Selections:

- Yes
  - Enter value pg/mL
- No

Required:
Yes
Suffix:

pg/mL

Pre Procedure Troponin

Data Abstraction Instructions:

Enter the Troponin I, Troponin T, Troponin I HS (High Sensitivity) or Troponin T HS value documented within the 30 days before the procedure. If more than one value exists, use the value closest to the procedure start time. If there is no value, enter not drawn.

If a patient has multiple procedures within a hospitalization, the pre-procedure labs should be abstracted after the previous procedure. If no labs are drawn from the end of the previous procedure to the start of the current procedure, enter "Not Drawn" for the initial Troponin field.

Selections:

- Yes
  - Pre procedure troponin I
    - Yes
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
      - Enter lab value
    - No
  - Pre procedure troponin T
    - Yes
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
      - Enter lab value
    - No
  - Pre procedure troponin I HS
    - Yes
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
      - Enter lab value
    - No
  - Pre procedure troponin T HS
    - Yes
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
      - Enter lab value
    - No
- Not Drawn

Required:
Yes
Suffix:
ng/dL, ng/mL, ng/L, pg/mL

Labs - Post Procedure

Post Procedure Peak Creatinine

Data Abstraction Instructions:

Enter the highest creatinine value documented from the end of the procedure to the next procedure or discharge, whichever occurs first.

- If the next procedure is any procedure utilizing contrast or any open surgical procedure, enter the highest creatinine value before the start time of the next procedure.
- If the "next procedure" is a complication of the current procedure, enter the highest creatinine value closest to discharge.
- If there is no value drawn post procedure, mark "Not drawn."
- For extended hospitalizations, greater than 30 days, use the highest creatinine prior to day 30 after the procedure.
- The range for Post Procedure Peak Creatinine is 0.1 - 15 mg/dL. Enter 0.1 for a creatinine value <0.1. Enter 15 for a creatinine value >15.

Selections:

- Yes
  - Enter value mg/dl
- Not drawn

Required:
Yes
Suffix:
mg/dl
Minimum:
0.1
Maximum:
15

Post Procedure Nadir Hemoglobin

Data Abstraction Instructions:

Enter the lowest hemoglobin value documented from the end of the procedure to the next procedure or discharge, whichever occurs first.

- If the next procedure is any invasive procedure that could potentially result in significant blood loss, enter the lower hemoglobin value before the start time of the next procedure.
- If the "next procedure" is a complication from the entered procedure, enter the lowest hemoglobin value before discharge.
- If only one value is available post procedure through discharge, that value will be used for the post procedure nadir hemoglobin **and** the discharge hemoglobin.
- If there is no value drawn post procedure, mark "Not drawn."
- The range for Post Procedure Nadir Hemoglobin is between 2 - 20 g/dL. Enter 2 for a hemoglobin <2. Enter 20 for a hemoglobin >20.

Selections:

- Yes
  - Enter value g/dl
- Not drawn

Required:
Yes
Suffix:
g/dl
Minimum:
2
Maximum:
20

Labs - Other

Albumin

Data Abstraction Instructions:

Enter the albumin value within 6 months before the current procedure. If no value is available pre-procedure, a value drawn during the current hospitalization may be used (if multiple values are available, enter the value closest to the procedure). If there is no value, mark "Not drawn."

The albumin reference range 3.5 - 4.9 g/dL. Enter 7 for an albumin value that is >7.

Selections:

- Yes
  - Enter value g/dl
- Not drawn

Required:
Yes
Minimum:
0
Maximum:
7

Indications

Indication Type

Selections:

- EVAR/AAA Revascularization
- Lower Extremity Revascularization
- Upper Extremity Revascularization
- Mesenteric Revascularization
- Renal Revascularization

Required:
Yes

Indications for EVAR/AAA Revascularization

Asymptomatic

Data Abstraction Instructions:

Indicate if patient presents for this hospitalization without showing any symptoms of AAA.

Selections:

- Yes
- No

Supporting Definitions:

The size of the aneurysm has reached a point where surgery is determined necessary.

Required:
Yes

Abdominal/Back Pain

Data Abstraction Instructions:

Indicate if patient presented with abdominal and/or back pain attributed to the aneurysm.

Selections:

- Yes
- No

Required:
Yes

Rapidly Increasing Aneurysm Diameter

Data Abstraction Instructions:

Indicate if there has been an increase in aneurysm diameter by 0.5 cm within 6 months to one year as determined by CTA.

Selections:

- Yes
- No

Supporting Definitions:

There has been rapid growth of the aneurysm necessitating surgery.

Required:
Yes
Suffix:
cm

Unfit for open AAA repair

Data Abstraction Instructions:

Endovascular repair performed because patient was considered too high risk by surgeon for open repair.

Selections:

- Yes
- No

Required:
Yes

Unfit for general anesthesia

Data Abstraction Instructions:

Endovascular repair performed because patient was considered too high risk by surgeon or anesthesiologist for general anesthesia.

Selections:

- Yes
- No

Required:
Yes

Infection

Data Abstraction Instructions:

Indicate if the procedure was performed due to an infection from a previous procedure.

Selections:

- Yes
- No

Required:
Yes

Size of Iliac Aneurysm

Data Abstraction Instructions:

Indicate if the primary reason for AAA repair is the size of an iliac aneurysm.

Selections:

- Yes
- No

Required:
Yes

Correction of Endoleak

Data Abstraction Instructions:

Indicate if the procedure is being perform to correct an endoleak from a prior procedure.

Required:
Yes

Concomitant Iliac Occlusive Disease

Data Abstraction Instructions:

Indicate of the procedure is being performed with the presence of concomitant iliac occlusive disease.

Supporting Definitions:

If the patient has documented ABIs, please enter them in the pre-imaging fields.

Required:
Yes

Lower Extremity Ischemia/Emboli

Data Abstraction Instructions:

Indicate if the procedure is being performed due to the presence of lower extremity ischemia/emboli due to the aneurysm.

Required:
Yes

Documented Patient Anxiety Levels

Data Abstraction Instructions:

Indicate if the aneurysm repair is being performed due to documented patient anxiety about aneurysm presence/growth/rupture.

Supporting Definitions:

There must be supporting documentation in the medical record to select yes.
Required:
Yes

Penetrating Ulcer

Data Abstraction Instructions:

Indicate if there is a penetrating ulcer present in the aneurysm and it is part of the indication for repair.

If a penetrating ulcer is present, indicate the size (mm).

Selections:

- Yes
  - Not Documented
  - Enter value mm
- No

Required:
Yes
Minimum:
0
Maximum:
30

Complication from Prior Procedure

Data Abstraction Instructions:

Indicate if the patient had a complication from a prior procedure.

Selections:

- Yes
- No

Supporting Definitions:

The patient had a dissection, perforation or another complication from a prior procedure (such as a cardiac or pulmonary angiogram) that required vascular repair (Percutaneous or Surgical).

Required:
Yes

Trauma

Data Abstraction Instructions:

Indicate if the vascular procedure was performed to repair injury that resulted from trauma (motor vehicle accident, fire, fall etc.).

Selections:

- Yes
- No

Required:
Yes

Mycotic Aneurysm

Data Abstraction Instructions:

Indicate if the procedure was performed to repair an infected abdominal aortic aneurysm. When choosing the Indication of Mycotic Aneurysm for a primary AAA repair, do not enter the Indication of Infection.

Required:
Yes

Pre-procedure Smoking Cessation

Data Abstraction Instructions:

Indicate if the patient received physician-delivered advice, a prescription for nicotine replacement, and/or a referral for smoking cessation services before admission to the hospital. These interventions would be implemented to prepare the patient for the current procedure. Select all that apply.

Selections:

- Yes
  - Physician delivered advice
    - Patient refused
  - Nicotine replacement therapy (NRT)
    - Patient refused

    - Referral to smoking counseling services
        - Patient refused
        - Local counseling service
        - Michigan Quitline
        - Other counseling service
- No

Supporting Definitions:

Yes = Enter Yes for Pre Procedure Smoking Cessation if Yes was entered for Current Smoker under Patient History ' Comorbidity, and one of the three steps was implemented before admission to the hospital.

Physician delivered advice = A surgeon, advanced practice personnel (PA, NP), or resident has a conversation with the patient and recommends the patient stop smoking. A recommendation to stop smoking offered by a nurse, respiratory therapist or student does not count as physician-delivered advice.

If there is documentation that the provider recommended smoking cessation and the patient refused, enter Physician delivered advice AND Patient refused. There must be adequate documentation to support this claim.

Nicotine replacement therapy (NRT) = The provider ordered NRT before admission to the hospital. NRT may include a nicotine patch, gum, lozenge, or other pharmacologic assistance (Varenicline or Bupropion).

If a patient refuses NRT, and there is provider documentation that NRT was offered and documentation that the patient refused, enter NRT AND Patient refused.

Referral to smoking counseling services = The provider documents they referred the patient to a smoking counseling service. Smoking counseling services may include a smoking counseling service, a smoking cessation program, a smoking cessation class, the Michigan Tobacco Quitline, or a national smoking cessation service. The provider must recommend a smoking counseling service to the patient. The standard message to stop smoking on the AVS or discharge summary template is not sufficient.

If a physician, mid-level provider, or resident does an assessment and then refers the patient to a respiratory therapist or a dedicated smoking cessation nurse to provide smoking cessation education, you can choose Referral to smoking counseling services.

If there is documentation that the provider recommended smoking counseling services and the patient refused, enter Referral to smoking counseling services, AND Patient refused. There must be adequate documentation to support this claim.

Patient Refused = The provider documented that the patient refused the corresponding intervention.

Local counseling service = The provider refers the patient to the hospital's smoking counseling service or a community-based smoking counseling service. Enter Referral to smoking counseling services AND Local counseling services.

Michigan Quitline = The provider refers the patient to the Michigan Tobacco Quitline. Enter Referral to smoking counseling services AND Referral to Michigan Quitline.

Other counseling service = The provider refers the patient to a Federal or National smoking cessation service. Enter Referral to smoking counseling services AND Other counseling services.

No = Enter No for Smoking Cessation at Discharge if No was entered for Ever Smoked or current Smoker under Patient History / Comorbidity. Enter No if the patient is a current smoker; however, none of the three steps were implemented before admission to the hospital.

Required:
Yes

Indications for Lower Extremity Revascularization (Open Bypass / Open Thrombectomy)

Claudication

Data Abstraction Instructions:

Indicate if the patient has leg pain caused by poor circulation, inhibiting patient's ability to walk distances.

Selections:

- Yes
- No

Supporting Definitions:

Refers to cramping pains in the legs (usually the calf muscles but may be in the thigh muscles) caused by poor circulation of the blood in the arteries to the leg muscles during exercise. True claudication is relieved with rest from exercise. If the patient has arm claudication from subclavian stenosis, do not include.

Required:
Yes

Rest Pain

Data Abstraction Instructions:

Indicate if the patient has severe pain in the foot and toes made worse by elevation of the leg and relieved by sitting or standing.

Selections:

- Yes
- No

Supporting Definitions:

Analgesics do not readily control rest pain.

Required:
Yes

Threatened Bypass Graft

Data Abstraction Instructions:

Indicate if the procedure performed is to maintain patency of a previously placed bypass graft.

Selections:

- Yes
  - Symptomatic
  - Asymptomatic
- No

Supporting Definitions:

This may be demonstrated via abnormal duplex scans, abnormal non-invasive imaging, or increased velocities identified during surveillance visits.

Required:
Yes

Acute Limb Ischemia

Data Abstraction Instructions:

Indicate if the procedure is performed for acute limb Ischemia (ALI).

Selections:

- Yes
- No

Supporting Definitions:

ALI is defined as a sudden decrease in limb perfusion that threatens limb viability and represents a major vascular emergency. The clinical presentation is acute if it occurs within 14 days after symptom onset. Symptoms of ALI include pain, pallor (paleness) paralysis (loss of muscle function), pulse deficit, paresthesia (tingling, numbness, burning, prickling sensation), and poikilothermia (cold or cool extremity when in a warm room).

Reference: ALI: An Update on Diagnosis and Management. *Journal of Clinical Medicine.* Doi: https://dx.doi.org/10.3390%2Fjcm8081215

Critical Limb Ischemia (CLI) is not the same as ALI. CLI is a progressive disease state. It is defined as ischemic rest pain, a nonhealing wound/ulcer, or gangrene for more than two weeks with signs of poor blood flow.

Reference: AHA Outlines Diagnosis, Treatment Options for Underrecognized Critical Limb Ischemia. Tctmd.com. https://www.tctmd.com/news/aha-outlines-diagnosis-treatment-options-underrecognized-critical-limb-ischemia

Required:
Yes

Failed Endovascular Procedure

Data Abstraction Instructions:

Indicate if the procedure was performed for a failed endovascular intervention.

Selections:

- Yes
- No

Supporting Definitions:

A failed endovascular procedure is one performed on the ipsilateral limb (same side as current procedure) within the same vascular bed within the last 30 days.

Example: Two weeks prior, patient had a left SFA stent. Now presents for a Left Common Femoral to Popliteal bypass.

Required:
Yes

Infection (Lower Extremity Revascularization)

Data Abstraction Instructions:

Indicate if the procedure was performed due to an infection from a prior procedure.

Selections:

- Yes
- No

Supporting Definitions:

The Indication of Infection captures vascular surgeries performed due to an infected graft, wound, or other sources of infection from a prior procedure; not those indicated for ulcers or wound healing.

Required:
Yes

Pre-Procedure Exercise Therapy

Data Abstraction Instructions:

Indicate if there is documentation that the patient was on or failed a pre-procedure exercise program before the hospitalization. If you entered yes, indicate if the exercise program was informal or structured.

Selections:

- Yes
  - Structured/Supervised
  - Home Based/Informal
- No

Required:
Yes

Impaired Ability to Work

Data Abstraction Instructions:

Indicate if the procedure is performed due to an inability to work.

Selections:

- Yes
- No

Required:
Yes

Peripheral Aneurysm Repair

Data Abstraction Instructions:

Indicate if the procedure is being performed for repair of a peripheral aneurysm. If you entered yes, indicate whether the patient is experiencing symptoms.

Selections:

- Yes
  - Symptomatic
  - Asymptomatic
- No

Supporting Definitions:

Peripheral aneurysms are aneurysms that develop in the upper or lower extremities.

Required:
Yes

Increased Stent Velocity

Data Abstraction Instructions:

Indicate if the procedure performed is due to increased velocities in a pre-existing stent and whether the patient is experiencing symptoms.

Selections:

- Yes
  - Symptomatic
  - Asymptomatic
- No

Supporting Definitions:

This may be demonstrated via abnormal duplex scans, abnormal non-invasive imaging, or increased velocities identified during surveillance visits.

Required:
Yes

Increased Stent Graft Velocity

Data Abstraction Instructions:

Indicate if the procedure performed is due to increased velocities in a pre-existing stent graft and whether the patient is experiencing symptoms.

Selections:

- Yes
  - Symptomatic
  - Asymptomatic
- No

Supporting Definitions:

This may be demonstrated via abnormal duplex scans, abnormal non-invasive imaging, or increased velocities identified during surveillance visits.

Required:
Yes

Wound (WIfI)

Data Abstraction Instructions:

Indicate if the patient has a wound present and to what degree.

Grade	*Ulcer*	*Gangrene*
0	No ulcer	No gangrene
Clinical description: ischemic rest pain (requires typical symptoms + ischemia grade 3); no wound.		
1	Small, shallow ulcer(s) on distal leg or foot; no exposed bone, unless limited to distal phalanx	No gangrene
Clinical description: minor tissue loss. Salvageable with simple digital amputation (1 or 2 digits) or skin coverage.		
2	Deeper ulcer with exposed bone, joint or tendon; generally not involving the heel; shallow heel ulcer, without calcaneal involvement	Gangrenous changes limited to digits
Clinical description: major tissue loss salvageable with multiple (≥3) digital amputations or standard TMA ± skin coverage.		
3	Extensive, deep ulcer involving forefoot and/or midfoot; deep, full thickness heel ulcer ± calcaneal involvement	Extensive gangrene involving forefoot and /or midfoot; full thickness heel necrosis ± calcaneal involvement
Clinical description: extensive tissue loss salvageable only with a complex foot reconstruction or nontraditional TMA (Chopart or Lisfranc); flap coverage or complex wound management needed for large soft tissue defect		

Selections:

- Yes
  - Grade 1: Minor tissue loss; small shallow ulceration
  - Grade 2: Major tissue loss; deeper ulceration with exposed bone, joint, or tendon
  - Grade 3: Extensive ulcer/gangrene;
  - Not Documented
- No

Required:
Yes

Ischemia (WIfI)

Data Abstraction Instructions:

Indicate the degree of ischemia present.

Grade	*ABI*	*Ankle systolic pressure*	*TP, $TcPO_2$*
0	≥0.80	>100 mm Hg	≥60 mm Hg
1	0.6-0.79	70-100 mm Hg	40-59 mm Hg
2	0.4-0.59	50-70 mm Hg	30-39 mm Hg
3	≤0.39	<50 mm Hg	<30 mm Hg

ABI, Ankle-brachial index; *PVR*, pulse volume recording; *SPP*, skin perfusion pressure; *TP*, toe pressure; *$TcPO_2$*, transcutaneous oximetry.
Patients with diabetes should have TP measurements. If arterial calcification precludes reliable ABI or TP measurements, ischemia should be documented by $TcPO_2$, SPP, or PVR. If TP and ABI measurements result in different grades, TP will be the primary determinant of ischemia grade.
Flat or minimally pulsatile forefoot PVR = grade 3.

Selections:

- Yes
  - Grade 1
  - Grade 2

- Grade 3
- Not Documented

- No

Required:
Yes

Foot Infection (WIfI)

Data Abstraction Instructions:

Indicate if the patient has a foot infection and to what degree.

Grade	Clinical Description	IDSA	IWGDF Class
0	wound without purulence or manifestations of infection	uninfected	1
1	>2 manifestations of infection (erythema or purulence, pain tenderness, warmth or induration) any cellulitis or erythema extends < 2cm around ulcer; infection is limited to skin or subcutaneous tissues; no local complications or systemic illness	mild	2
2	Infection in patient who is systemically and metabolically stable but has ≥1 of the following: cellulitis extending 2cm, lymphangitis; spread beneath fascia; deep tissue abscess; gangrene; muscle, tendon, joint or bone involvement	moderate	3
3	Infection in patient with systemic or metabolic toxicity	severe	4

Selections:

- Yes
  - Grade 1: >2 manifestations of infection (erythema, purulence, pain, warmth, etc.)
  - Grade 2: Infection in patient who is systemically stable but has one or more of the following; cellulitis extending 2cm, spread beneath fascia, deep tissue abscess, gangrene, muscle/tendon/bone involvement
  - Grade 3: Infection in patient with systemic or metabolic toxicity
  - Not Documented
- No

Required:
Yes

Complication from Prior Procedure

Data Abstraction Instructions:

Indicate if the patient had a complication from a prior procedure.

Selections:

- Yes
- No

Supporting Definitions:

The patient had a dissection, perforation or another complication from a prior procedure (such as a cardiac or pulmonary angiogram) that required vascular repair (Percutaneous or Surgical).

Required:
Yes

Trauma

Data Abstraction Instructions:

Indicate if the vascular procedure was performed to repair injury that resulted from trauma (motor vehicle accident, fire, fall etc.).

Selections:

- Yes
- No

Required:
Yes

Popliteal Artery Entrapment Syndrome (PAES)

Data Abstraction Instructions:

Indicate if the procedure was performed for popliteal artery entrapment syndrome (PAES).

Selections:

- Yes
- No

Supporting Definitions:

PAES is caused by an anatomical anomaly. The condition can also develop over time, as exercise and training lead to an enlarged calf muscle that compresses the popliteal artery.

Required:
Yes

Pre-procedure Smoking Cessation

Data Abstraction Instructions:

Indicate if the patient received physician-delivered advice, a prescription for nicotine replacement, and/or a referral for smoking cessation services before admission to the hospital. These interventions would be implemented to prepare the patient for the current procedure. Select all that apply.

Selections:

- Yes
  - Physician delivered advice
    - Patient refused
  - Nicotine replacement therapy (NRT)
    - Patient refused
  - Referral to smoking counseling services
    - Patient refused
    - Local counseling service
    - Michigan Quitline
    - Other counseling service
- No

Supporting Definitions:

Yes = Enter Yes for Pre Procedure Smoking Cessation if Yes was entered for Current Smoker under Patient History ' Comorbidity, and one of the three steps was implemented before admission to the hospital.

Physician delivered advice = A surgeon, advanced practice personnel (PA, NP), or resident has a conversation with the patient and recommends the patient stop smoking. A recommendation to stop smoking offered by a nurse, respiratory therapist or student does not count as physician-delivered advice.

If there is documentation that the provider recommended smoking cessation and the patient refused, enter Physician delivered advice AND Patient refused. There must be adequate documentation to support this claim.

Nicotine replacement therapy (NRT) = The provider ordered NRT before admission to the hospital. NRT may include a nicotine patch, gum, lozenge, or other pharmacologic assistance (Varenicline or Bupropion).

If a patient refuses NRT, and there is provider documentation that NRT was offered and documentation that the patient refused, enter NRT AND Patient refused.

Referral to smoking counseling services = The provider documents they referred the patient to a smoking counseling service. Smoking counseling services may include a smoking counseling service, a smoking cessation program, a smoking cessation class, the Michigan Tobacco Quitline, or a national smoking cessation service. The provider must recommend a smoking counseling service to the patient. The standard message to stop smoking on the AVS or discharge summary template is not sufficient.

If a physician, mid-level provider, or resident does an assessment and then refers the patient to a respiratory therapist or a dedicated smoking cessation nurse to provide smoking cessation education, you can choose Referral to smoking counseling services.

If there is documentation that the provider recommended smoking counseling services and the patient refused, enter Referral to smoking counseling services, AND Patient refused. There must be adequate documentation to support this claim.

Patient Refused = The provider documented that the patient refused the corresponding intervention.

Local counseling service = The provider refers the patient to the hospital's smoking counseling service or a community-based smoking counseling service. Enter Referral to smoking counseling services AND Local counseling services.

Michigan Quitline = The provider refers the patient to the Michigan Tobacco Quitline. Enter Referral to smoking counseling services AND Referral to Michigan Quitline.

Other counseling service = The provider refers the patient to a Federal or National smoking cessation service. Enter Referral to smoking counseling services AND Other counseling services.

No = Enter No for Smoking Cessation at Discharge if No was entered for Ever Smoked or current Smoker under Patient History / Comorbidity. Enter No if the patient is a current smoker; however, none of the three steps were implemented before admission to the hospital.

Required:
Yes

Indications for Upper Extremity Revascularization (Open Bypass / Open Thrombectomy)

Ulcer/Gangrene

Data Abstraction Instructions:

Indicate if the patient has an ulcer, gangrene, or if tissue loss is present.

Selections:

- Yes
- No

Required:
Yes

Acute Limb Ischemia

Data Abstraction Instructions:

Indicate if there is any sudden decrease in limb perfusion that causes a potential threat to limb viability.

Selections:

- Yes
- No

Supporting Definitions:

ALI is defined as a sudden decrease in limb perfusion that threatens limb viability and represents a major vascular emergency. The clinical presentation is acute if it occurs within 14 days after symptom onset. Symptoms of ALI include pain, pallor (paleness), paralysis (loss of muscle function), pulse deficit, paresthesia (tingling, numbness, burning, prickling sensation), and poikilothermia (cold or cool extremity when in a warm room). Reference: ALI: An Update on Diagnosis and Management. *Journal of Clinical Medicine.* Doi: https://dx.doi.org/10.3390%2Fjcm8081215

Critical limb ischemia is not the same as ALI. CLI is defined as ischemic rest pain, a nonhealing wound/ulcer, or gangrene for more than two weeks with signs of poor blood flow. Reference: AHA Outlines Diagnosis, Treatment Options for Underrecognized Critical Limb Ischemia. Tctmd.com. https://www.tctmd.com/news/aha-outlines-diagnosis-treatment-options-underrecognized-critical-limb-ischemia

Required:
Yes

Angina/Abnormal Cardiac Stress Test

Data Abstraction Instructions:

Indicate if patient has had episodes of angina, or if patient has had an abnormal cardiac stress test.

Selections:

- Yes
- No

Supporting Definitions:

Indication for revascularization is cardiac ischemia secondary to impaired blood flow to coronary artery bypass graft (e.g., left subclavian stenosis in a patient with an in situ left internal mammary artery bypass graft).

For informational purposes, one of the following criteria are necessary:

- Angina at rest (usually prolonged >20 mins)
- New onset (less than two months) exertional angina of at least Canadian cardiovascular Society Classification (CCSC) class III
- Recent (less than two months) acceleration of angina reflected by an increase in severity of at least one CCSC class to at least CCSC class III. The patient must also NOT have any biochemical evidence of myocardial necrosis.

Required:
Yes

BP discrepancy

Data Abstraction Instructions:

Indicate if the patient has a more than 50 mm difference in systolic BP between L and R arms.

Selections:

- Yes
- No

Supporting Definitions:

This may be seen in subclavian stenosis.

Required:
Yes

Arm Claudication

Data Abstraction Instructions:

Indicate if the patient has arm pain caused by poor circulation.

Selections:

- Yes
- No

Supporting Definitions:

Refers to cramping pains in the arms caused by poor circulation of the blood in the arteries to the arm muscles during exercise. True claudication is relieved with rest from exercise.

Required:
Yes

Peripheral Aneurysm Repair

Data Abstraction Instructions:

Indicate if the procedure is being performed for repair of a peripheral aneurysm and whether the patient is experiencing symptoms.

Selections:

- Yes
  - Symptomatic
  - Asymptomatic
- No

Supporting Definitions:

Peripheral aneurysms are aneurysms that develop in the upper or lower extremities.

Required:
Yes

Complication from Prior Procedure

Data Abstraction Instructions:

Indicate if the patient had a complication from a prior procedure.

Selections:

- Yes
- No

Supporting Definitions:

The patient had a dissection, perforation or another complication from a prior procedure (such as a cardiac or pulmonary angiogram) that required vascular repair (Percutaneous or Surgical).

Required:
Yes

Trauma

Data Abstraction Instructions:

Indicate if the vascular procedure was performed to repair injury that resulted from trauma (motor vehicle accident, fire, fall etc.).

Selections:

- Yes
- No

Required:
Yes

Pre-procedure Smoking Cessation

Data Abstraction Instructions:

Indicate if the patient received physician-delivered advice, a prescription for nicotine replacement, and/or a referral for smoking cessation services before admission to the hospital. These interventions would be implemented to prepare the patient for the current procedure. Select all that apply.

Selections:

- Yes
  - Physician delivered advice
    - Patient refused
  - Nicotine replacement therapy (NRT)
    - Patient refused
  - Referral to smoking counseling services
    - Patient refused
    - Local counseling service
    - Michigan Quitline
    - Other counseling service
- No

Supporting Definitions:

Yes = Enter Yes for Pre Procedure Smoking Cessation if Yes was entered for Current Smoker under Patient History ' Comorbidity, and one of the three steps was implemented before admission to the hospital.

Physician delivered advice = A surgeon, advanced practice personnel (PA, NP), or resident has a conversation with the patient and recommends the patient stop smoking. A recommendation to stop smoking offered by a nurse, respiratory therapist or student does not count as physician-delivered advice.

If there is documentation that the provider recommended smoking cessation and the patient refused, enter Physician delivered advice AND Patient refused. There must be adequate documentation to support this claim.

Nicotine replacement therapy (NRT) = The provider ordered NRT before admission to the hospital. NRT may include a nicotine patch, gum, lozenge, or other pharmacologic assistance (Varenicline or Bupropion).

If a patient refuses NRT, and there is provider documentation that NRT was offered and documentation that the patient refused, enter NRT AND Patient refused.

Referral to smoking counseling services = The provider documents they referred the patient to a smoking counseling service. Smoking counseling services may include a smoking counseling service, a smoking cessation program, a smoking cessation class, the Michigan Tobacco Quitline, or a national smoking cessation service. The provider must recommend a smoking counseling service to the patient. The standard message to stop smoking on the AVS or discharge summary template is not sufficient.

If a physician, mid-level provider, or resident does an assessment and then refers the patient to a respiratory therapist or a dedicated smoking cessation nurse to provide smoking cessation education, you can choose Referral to smoking counseling services.

If there is documentation that the provider recommended smoking counseling services and the patient refused, enter Referral to smoking counseling services, AND Patient refused. There must be adequate documentation to support this claim.

Patient Refused = The provider documented that the patient refused the corresponding intervention.

Local counseling service = The provider refers the patient to the hospital's smoking counseling service or a community-based smoking counseling service. Enter Referral to smoking counseling services AND Local counseling services.

Michigan Quitline = The provider refers the patient to the Michigan Tobacco Quitline. Enter Referral to smoking counseling services AND Referral to Michigan Quitline.

Other counseling service = The provider refers the patient to a Federal or National smoking cessation service. Enter Referral to smoking counseling services AND Other counseling services.

No = Enter No for Smoking Cessation at Discharge if No was entered for Ever Smoked or current Smoker under Patient History / Comorbidity. Enter No if the patient is a current smoker; however, none of the three steps were implemented before admission to the hospital.

Required:
Yes

Procedure Details

Choose the type of Vascular Surgery procedure to be performed.

- Open Bypass/Revascularization
- Open Abdominal Aortic Aneurysm
- Endovascular Aneurysm Repair (EVAR)
- Open Thrombectomy

Open Bypass/Revascularization

Qualifying Procedures:

- Upper Extremity Bypass or Lower Extremity Bypass
- Bypass that includes a Graft Origin (where the graft was proximally attached to the artery) and a Graft Insertion (the distal attachment to the artery)
- A procedure where the aneurysm is cut out and replaced with an interposition graft
- Bypass of a previous bypass
    - An Open Bypass revision where the old graft is removed and replaced with a new graft
    - An Open Bypass revision where a new graft is connected to an old graft
- Patch angioplasty, open endarterectomy, open thromboembolectomy, aneurysm, or pseudoaneurysm repair as a concomitant procedure to an open bypass. You will enter these concurrent procedures under the Locations section of the website.

Open Bypass procedures that do not qualify:

- Visceral bypass
- Any open bypass that involves a carotid artery. Examples:
    - Carotid-subclavian bypass
    - Carotid-carotid bypass
- Renal bypass
- Mesenteric bypass
- Revision is done at one end of the graft (for example, a kink was fixed)
- AV fistula procedure, repair, or intervention
- Dialysis graft procedure, repair, or intervention
- A bypass graft revision that did not have a new graft implanted
- Patch on anastomosis

Graft Origin

Data Abstraction Instructions:

Enter the origin point on vessel using the vessel artery map. This is the location where the graft is proximally attached to the artery. and arterial flow enters the graft (inflow).

Selections:

- Select artery name from list

Required:
Yes

Graft Insertion

Data Abstraction Instructions:

Select insertion point on vessel. This is the distal attachment to the artery. Arterial flow exits the graft (outflow).
If two insertion sites are used, enter the second insertion site in the Graft Insertion #2 field.

Selections:

- Select artery name from list

Required:
Yes

Graft Insertion #2

Data Abstraction Instructions:

Select the second insertion point (outflow) from the dropdown list, if applicable. For example, if an aorto-bifemoral bypass was performed. Enter the right CFA for the insertion point and the left CFA for the 2nd insertion point.

Selections:

- Select artery name from list

Required:
No

Redo Procedure

Data Abstraction Instructions:

Indicate if the procedure being performed is a redo of a previous bypass.

Selections:

- Yes
- No

Supporting Definitions:

The intent is to capture bypass procedures that are performed to revascularize the same arterial bed as a previous bypass. It does not necessarily require the same origin and insertion.

Required:
Yes

Vein Graft

Data Abstraction Instructions:

Indicate if a vein graft was used for bypass. If yes, indicate type of vein graft. If both a vein and a prosthetic graft were used, enter Yes for both Vein Graft and Prosthetic Graft.

Selections:

- Yes
  - Reversed (greater saphenous vein) GSV
  - In Situ GSV
  - Non-reversed transposed GSV
  - Lesser saphenous
  - Cephalic
  - Basilic
  - Allograft
  - Composite
  - Other
- No

Supporting Definitions:

Reversed GSV = an incision is made at the proximal and distal ends of the vein. The vein is reversed to allow blood to flow through.

In Situ GSV = The GSV can be used In Situ, in its native position in the vascular bed where only the origin and insertion are maneuvered to create an anastomosis to the artery.

Non-reversed transposed GSV = The GSV can be Non-Reversed Transposed, or moved, to create a bypass.

Lesser saphenous = a venous blood vessel that runs up the length of the leg. It originates from the junction formed between two small veins in the foot, the fifth toe's dorsal vein and the dorsal venous arch.

Cephalic = The cephalic vein courses through both the forearm and arm and terminates by draining into the axillary vein.

Basilic = The basilic vein lies in the deep subcutaneous tissue at the antecubital crease and pierces the brachial fascia in the distal third of the upper arm.

Allograft = A donor cadaver vein. CryoVein is a brand name of a cadaver vein.

Composite = A combination of vein graft and prosthetic graft.

Other = Options that are not in the list above, such as Xenograft.

Required:
Yes

Vein Graft Harvest

Data Abstraction Instructions:

Indicate the type of vein that was harvested from the patient during the current open bypass surgery. If a prosthetic graft, allograft or xenograft is implanted, enter Not Harvested.

Selections:

- Open
- Endoscopic
- Not harvested

Supporting Definitions:

Open = A long incision or skip incisions are made into the skin.
Endoscopic = small puncture incisions and an endoscope with a CO2 balloon, a dissector tool, a harvesting tool and a cutting tool using cautery to cut side branches.
Not harvested = A prosthetic graft, allograft or xenograft was used.
Required:
Yes

Number of Vein Segments

Data Abstraction Instructions:

Indicate the number of vein segments used in the bypass procedure.

Selections:

- One
- Two
- Three or more

Required:
Yes

Prosthetic Graft

Data Abstraction Instructions:

Indicate the type of prosthetic graft used. Select all that apply. If both a vein and a prosthetic graft were used, enter Yes for both Prosthetic Graft and Vein Graft.

Selections:

- Yes
    - Dacron
    - PTFE
    - Composite with vein
- No

Supporting Definitions:

Dacron = a woven or knitted graft.

PTFE = a graft made out of Teflon or polyester. May also be called a Gore-Tex graft.

Composite with vein = the patient's vein and a prosthetic graft were used.

Required:
Yes

Vein Cuff

Data Abstraction Instructions:

Indicate if a vein cuff was used at anastomosis.

Selections:

- Yes
- No

Supporting Definitions:

Prosthetic grafts can be anastomosed directly to the recipient artery. However, several techniques incorporating vein into the distal anastomosis have been utilized in an effort to improve long-term patency.

Required:
Yes

Intra Operative Graft Patency

Data Abstraction Instructions:

Indicate the method used to assess graft patency at the end of the procedure and if it was normal or abnormal. This should indicate flow through the graft itself and is not related to outflow vessels.

Selections:

- Yes
    - Doppler
    - Duplex
    - Angiogram
        - Normal
        - Abnormal
- No

Required:
Yes

Intra Operative Graft Revision

Data Abstraction Instructions:

Indicate if intraoperative graft revision was performed.

Selections:

- Yes
- No

Supporting Definitions:

A graft revision is a part of the procedure that is unplanned after the initial graft is sewn into place and tested for patency. For example: revision for thrombus after poor doppler signals, kinking, or anastomosis revision.

Required:
Yes

Closure for Open Exposure

Data Abstraction Instructions:

Identify all that apply for incision closure. Include all layers of closure - muscle, subcutaneous, and skin.

Selections:

- Suture
  - Absorbable
  - Permanent
- Staples
- Delayed
- Other

Required:
Yes

Open Abdominal Aortic Aneurysm (OAAA)

Qualifying Procedures:

- Open Infrarenal, Juxtarenal, and Suprarenal AAA repair.
  - Also, an Open AAA that was performed for the Indication of Penetrating Ulcer without the presence of an aneurysm.
- Open Infrarenal, Juxtarenal, and Suprarenal AAA for repair of a **Ruptured** AAA. Even if the patient expires after the primary incision was made.
- An EVAR converted to an OAAA during the same OR time.
  - Enter both EVAR and OAAA procedures.
- Patch angioplasty, open endarterectomy, open thromboembolectomy, or pseudoaneurysm repair as a concomitant procedure to an open AAA.
  - Enter these concurrent procedures under the Locations section of the website.

OAAA procedures that do not qualify:

- An open aneurysm repair in the thoracic abdominal aorta (above the diaphragm)
- An OAAA that is done for the indication of aortic stenosis or pseudoaneurysm repair
- Patch on anastomosis
- A qualifying OAAA where the procedure was aborted BEFORE the primary incision was made

Prior Family History of AAA

Data Abstraction Instructions:

Indicate if relative (parent, sibling, aunt, uncle, child) has/had a history of AAA.

Selections:

- Yes
- No

Required:
Yes

Prior Aortic Surgery (OAAA)

Data Abstraction Instructions:

Enter the year, and type of repair, of the prior procedure (yyyy).

Selections:

- Yes
  Enter year
  Select option
  - AAA (Infrarenal)
  - SAAA (Suprarenal)
  - Bypass

    - Other (Endarterectomy or Other)
- No

Required:
No
Minimum:
1900
Maximum:
9999

Maximum AAA Diameter (OAAA)

Data Abstraction Instructions:

Enter AAA largest diameter in millimeters. For ruptured AAA procedures, use not documented only if value not available.

Selections:

- Documented
    - Enter value in mm
- Not documented

Supporting Definitions:

Use largest diameter. If multiple imaging modality, use most accurate in following hierarchy: CT > MRI > ECHO > Arteriogram.

For AAA repair performed due only to iliac aneurysm size (no abdominal aortic aneurysm), enter Not Documented.

Required:
Yes
Suffix:
mm
Minimum:
25
Maximum:
200

Iliac Aneurysm (OAAA)

Data Abstraction Instructions:

Indicate if the patient had an iliac aneurysm that is >2 cm (>20 mm) as the maximum measurement. The aneurysm can be located in the common iliac artery (CIA), external iliac artery (EIA), or internal iliac artery (hypogastric).

Selections:

- Yes
    - Unilateral
    - Bilateral
        - Enter value in mm
- No

Required:
Yes
Suffix:
mm
Minimum:
10
Maximum:
100

Aneurysm location (OAAA)

Data Abstraction Instructions:

Enter the aneurysm location as described in the pre-imaging or surgical dictation.

Selections:

- Yes
    - Infrarenal
    - Juxtarenal
    - Suprarenal
    - Not documented
- No

Required:
Yes

Aneurysm anatomy (OAAA)

Data Abstraction Instructions:

Enter the aneurysm anatomy as described in the pre-imaging or surgical dictation.

Selections:

- Yes
  - Fusiform
  - Saccular
  - Both
  - Not documented
- No

Supporting Definitions:

Both = the aneurysm anatomy is documented as a bi-lobed aneurysm with one lobe having fusiform anatomy and one lobe having saccular anatomy.

Required:
Yes

Contained rupture (OAAA)

Data Abstraction Instructions:

Indicate if the aneurysm was described as a contained rupture on pre-imaging or in the physician dictation.

Selections:

- Yes
- No

Required:
Yes

Ruptured AAA (OAAA)

Data Abstraction Instructions:

Indicate if the aneurysm was ruptured at the time of the procedure. This includes free ruptures with extravasation of blood/contrast on pre-imaging or in the physician dictation.

Selections:

- Yes
- No

Supporting Definitions:

Contained ruptures do not qualify.

Required:
Yes

Lowest Pre-Intubation Blood Pressure (for ruptured AAA repairs only) (OAAA)

Data Abstraction Instructions:

Indicate the lowest pre-intubation BP, after arrival at hospital, use systolic pressure.

Selections:

- Yes
  - Enter value in mmHg
- Not documented

Required:
Yes
Suffix:
mmHg
Minimum:
0
Maximum:
200

Mental Status (for ruptured AAA repairs only) (OAAA)

Data Abstraction Instructions:

Indicate the patient's mental status on arrival to the operating room. If the patient was intubated upon arrival to the OR, enter Unconscious.

Selections:

- Yes
  - Normal (alert and oriented)
  - Disoriented to person, place, or time
  - Unconscious
- Not documented

Required:
Yes

Cardiac Arrest (for ruptured AAA repairs only) (OAAA)

Data Abstraction Instructions:

Indicate if the patient was in cardiac arrest on arrival to the operating room.

Selections:

- Yes
- No

Required:
Yes

Timeframe: Symptoms to Incision (for ruptured AAA repairs only) (OAAA)

Data Abstraction Instructions:

Record the time from symptom onset until surgical incision. The time of symptom onset may be documented in the EMS records, ED records, or operative notes. If the time of symptom onset is not exact, enter as much information that is documented. For example, if the symptom onset is documented as "two days ago," enter 48 hours. If the time of symptom onset is not documented in the hospital documents, calculate the time of symptom onset from the time EMS made contact with the patient.

Selections:

- Yes
  - Enter value in hours
- Not documented

Required:
Yes
Suffix:
hours
Minimum:
0
Maximum:
72

Timeframe: Admission to Incision (for ruptured AAA repairs only) (OAAA)

Data Abstraction Instructions:

Record the time from when the patient was admitted to the surgical incision in hours. If the patient was admitted through the ED, use the date and time the patient arrived to the ED.

Selections:

- Yes
  - Enter value in hours
- Not documented

Required:
Yes
Suffix:
hours
Minimum:
0
Maximum:
24

Abdomen Explored (OAAA)

Data Abstraction Instructions:

Indicate if the abdomen was explored by the surgeon to evacuate hematoma, but not to repair rupture.

Selections:

- Yes
- No

Required:
Yes

Conversion from Endovascular Repair (OAAA)

Data Abstraction Instructions:

Indicate if the endovascular aneurysm repair had to be converted to an open procedure If yes, the time frame for the conversion.

Selections:

- Yes
  - Immediate
  - > 1 day to 30 days
  - > 30 days
- No

Supporting Definitions:

Include EVARs converted to open procedures even after multiple years.

Required:
Yes

Exposure (OAAA)

Data Abstraction Instructions:

Indicate the exposure used for AAA repair.

Selections:

- Transperitoneal
- Retroperitoneal

Supporting Definitions:

Transperitoneal = through the peritoneum - look for midline incision.
Retroperitoneal = behind the peritoneum - look for lateral positioning, flank incision.

Required:
Yes

Distal Anastomosis (OAAA)

Data Abstraction Instructions:

Indicate the anastomosis of the graft that is most distal to the aneurysm. If the graft is bifurcated, enter the location of the most distal limb.

Selections:

- Aorta
- Common Iliac Artery (CIA)
- External Iliac Artery (EIA)
- Common Femoral Artery (CFA)
- Graft Not Utilized

Required:
Yes

Graft Body Diameter (OAAA)

Data Abstraction Instructions:

Body size is diameter of most proximal portion of graft.

Selections:

- Documented
  - Enter value in mm
- Not documented
- Graft Not Utilized

Required:
Yes
Suffix:
mm
Minimum:
8
Maximum:
40

Graft Type (OAAA)

Data Abstraction Instructions:

Indicate type of graft used for repair. Choose all that apply.

Selections:

- Dacron
- PTFE
- Allograft
- Other
- Graft Not Utilized

Required:
Yes

Renal Status (OAAA)

Data Abstraction Instructions:

Indicate renal status and interventions, check all that apply.
Selections:

- Yes
  - Patent, No Intervention
  - Chronically Occluded
  - Purposely Occluded
  - De-Branch/Bypass
  - Stent
  - Chimney
  - Fenestrated/scallop
  - Side Branch From Graft
  - Accessory Renal Artery Covered
- No
- Not documented

Supporting Definitions:

- **Patent, No Intervention** = No intervention required to maintain renal artery patency
- **Chronically Occluded** = Renal artery was chronically occluded prior to procedure
- **Purposely Occluded** = Renal artery was intentionally occluded during the procedure
- **De-Branch/Bypass** = Additional intra-operative surgery to bypass renal or visceral vessels
- **Stent** = Renal stent placed to maintain renal artery patency
- **Chimney** = Placement of a bare metal/covered stent that maintains renal artery patency where the graft occludes the orifice of the renal(s)
- **Fenestrated/scallop** = Hole or orifice in the graft to maintain renal or visceral vessel patency
- **Side Branch From Graft** = Custom made grafts with an additional smaller graft off the main body to maintain renal or visceral vessel patency
- **Accessory renal covered** = Multiple arteries to the kidney are present and one (or more) is covered by the graft

Additional covered stents can be (and usually are) added to the fenestrated grafts at the scalloped and side branches to maintain renal patency. The side arm branches may or may not reach beyond the aneurysm by themselves and a covered graft may bridge between the main body and renal artery.

Required:
Yes

Anastomotic Felt Reinforcement (OAAA)

Data Abstraction Instructions:

Indicate if Felt Reinforcement was used at the anastomosis site.

Selections:

- Yes
- No

Required:
No

Hypogastric ligated/occluded (OAAA)

Data Abstraction Instructions:

Indicate if the hypogastric artery was ligated or occluded during the procedure.

Selections:

- Yes
  - Single
  - Both
- No

Required:
Yes

Proximal Clamp Position (OAAA)

Data Abstraction Instructions:

Indicate the position of the proximal clamp during the repair.

Selections:

- Infrarenal
- Above 1 renal
- Above both renal
- Supraceliac
- Clamp not utilized

Required:
Yes

Inferior Mesenteric Artery at Completion (OAAA)

Data Abstraction Instructions:

Indicate the status of the IMA at the end of the procedure.

Selections:

- Occluded
- Ligated
- Re-implanted
- Patent
- Graft Not Utilized
- Not documented

Supporting Definitions:

Occluded = The IMA may be occluded by thrombus before the start of the procedure (dictated no flow/not visualized on pre-procedure imaging).

Ligated = The IMA may be sutured/ligated during the procedure due to back-bleeding from the artery.

Re-implanted = If the IMA appears to be a major source of flow to the bowels, it may be re-implanted to prevent bowel ischemia.

Patent = The IMA is open to blood flow. If the IMA was re-implanted and open to blood flow, enter re-implanted.

Graft not utilized = The graft was not implanted. Graft not utilized is not a substitution for “not documented.”

Not documented = The status of the IMA at the end of the procedure is not documented.

Required:
Yes

Renal/Visceral Ischemic Time (OAAA)

Data Abstraction Instructions:

Indicate time of renal/visceral clamp time. Include any aortic reclamp time for hypotension.

Selections:

- Documented
  - Enter value in minutes
- Not documented
- Clamp not utilized

Supporting Definitions:

The Renal/Visceral Ischemic Time is the amount of time that either 1 or both renals were without blood flow. The surgeon may document this. The time may be recorded on the anesthesia record. Or you can subtract the time the clamp was placed above 1 or both renals from the time the clamp was taken off.
If the proximal clamp time is Infrarenal, it is below the kidneys; enter 0 minutes for ischemic time because the renals had bloodflow during the time the aorta was clamped.

Required:
Yes
Suffix:
minutes

Intra Operative Graft Revision (OAAA)

Data Abstraction Instructions:

Indicate if graft revision was performed during the procedure.

Selections:

- Yes
- No

Supporting Definitions:

A revision is a part of the procedure that is unplanned after the initial graft is sewn into place and tested for patency.

Required:
Yes

Cold Renal Perfusion (OAAA)

Data Abstraction Instructions:

Indicate if the infusion of cold crystalloids was administered into the renal artery during the AAA repair to prevent post procedure renal failure.

Selections:

- Yes
- No

Required:

Yes

Mannitol administered during procedure (OAAA)

Data Abstraction Instructions:

Indicate if Mannitol was administered during procedure.

Selections:

- Yes
- No

Required:
Yes

Closure for Open Exposure (OAAA)

Data Abstraction Instructions:

Identify all that apply for incision closure. Include all layers of closure - muscle, subcutaneous, and skin.

Selections:

- Suture
  - Absorbable
  - Permanent
- Staples
- Delayed
- Other

Required:
Yes

Endovascular Aneurysm Repair (EVAR)

Qualifying Procedures:

- Endovascular Infrarenal, Juxtarenal, and Suprarenal AAA repair
- Endovascular Ruptured AAA repair. Even if the patient expires after the sheath was inserted

- An EVAR was done for the indication of **iliac** artery aneurysm repair, AND a main body endograft was implanted into the aorta in addition to the iliac endograft
- An EVAR that was converted to an OAAA during the same OR time
  - Enter both EVAR and OAAA procedures.
- A qualifying EVAR where the sheath was inserted; even if the wire or device did not cross the index lesion
- EVAR Revision: Collect if a new main body was implanted
- Patch angioplasty, open endarterectomy, open thromboembolectomy, or pseudoaneurysm repair as a concomitant procedure to an EVAR.
  - Enter these concurrent procedures under the Locations section of the website.

EVAR procedures that do not qualify:

- An endovascular aneurysm repair in the thoracic abdominal aorta (above the diaphragm)
- An EVAR that is done for the Indications of Chronic Iliac Occlusive disease only (no aneurysm repair), aortic stenosis, or pseudoaneurysm repair
- A qualifying EVAR where the sheath was unable to be inserted
- EVAR Revision: a limb extension or other endovascular device was added to a main body endograft

Prior Family History of AAA (EVAR)

Data Abstraction Instructions:

Indicate if relative (parent, sibling, aunt, uncle, child) has/had a history of AAA.

Selections:

- Yes
- No

Required:
Yes

Prior Aortic Surgery (EVAR)

Data Abstraction Instructions:

Enter the year, and type of repair, of the prior procedure (yyyy).

Selections:

- Yes
  Enter year
  - AAA (Infrarenal)

    - SAAA (Suprarenal)
    - Bypass
    - Other (Endarterectomy or Other)
- No

Required:
No
Minimum:
1900
Maximum:
9999

Maximum AAA Diameter (EVAR)

Data Abstraction Instructions:

Enter AAA largest diameter in millimeters.

Selections:

- Documented
    - Enter value in mm
- Not documented

Supporting Definitions:

Use largest diameter. If multiple imaging modality, use most accurate in following hierarchy: CT > MRI > ECHO > Arteriogram. This can also be taken from the EVAR planning sheet.

For AAA repair performed due only to iliac aneurysm size (no abdominal aortic aneurysm), enter Not Documented.

Required:
Yes
Suffix:
mm
Minimum:
25
Maximum:
200

Iliac Aneurysm (EVAR)

Data Abstraction Instructions:

Indicate if the patient had an iliac aneurysm that is >2 cm (>20 mm) as the maximum measurement. The aneurysm can be located in the common iliac artery (CIA), external iliac artery (EIA), or internal iliac artery (hypogastric).

Selections:

- Yes
    - Unilateral
    - Bilateral
        - Enter value in mm
- No

Required:
Yes
Suffix:
mm
Minimum:
10
Maximum:
100

Aneurysm location (EVAR)

Data Abstraction Instructions:

Enter the aneurysm location as described in the pre-imaging or surgical dictation.

Selections:

- Yes
    - Infrarenal
    - Juxtarenal
    - Suprarenal
    - Not documented
- No

Required:
Yes

Aneurysm anatomy (EVAR)

Data Abstraction Instructions:

Enter the aneurysm anatomy as described in the pre-imaging or surgical dictation.

Selections:

- Yes
  - Fusiform
  - Saccular
  - Both
  - Not documented
- No

Supporting Definitions:

Both = the aneurysm anatomy is documented as a bi-lobed aneurysm with one lobe having fusiform anatomy and one lobe having saccular anatomy.

Required:
Yes

Contained rupture (EVAR)

Data Abstraction Instructions:

Indicate if the aneurysm was described as a contained rupture on pre-imaging or in the physician dictation.

Selections:

- Yes
- No

Required:
Yes

Infrarenal Neck Diameter (EVAR)

Data Abstraction Instructions:

Enter neck diameter in millimeters as determined by CTA or IVUS.

Selections:

- Yes
  - Enter value in mm
- No

Supporting Definitions:

This measurement is the diameter of the aortic neck that is above the aneurysm. This measurement will come from a CTA scan, may be documented in radiology or operative note. This can also be taken from the EVAR planning sheet.

Required:
Yes
Suffix:
mm
Minimum:
5
Maximum:
75

Infrarenal Neck Length (EVAR)

Data Abstraction Instructions:

Enter length of infrarenal neck in millimeters as determined by CTA or IVUS (intravascular ultrasound).

Selections:

- Yes
  - Enter value in mm
- No

Supporting Definitions:

The neck length is the distance of the aorta that is below the level of the lowermost renal artery to the top of the aneurysm.
This measurement will come from a CTA scan, may be documented in radiology or operative note. This can also be taken from the EVAR planning sheet.

Required:
Yes
Suffix:
mm
Minimum:
0
Maximum:
50

Ruptured AAA (EVAR)

Data Abstraction Instructions:

Indicate if the aneurysm was ruptured at the time of the procedure. This includes free ruptures with extravasation of blood/contrast on pre-imaging or in the physician dictation.

Selections:

- Yes
- No

Supporting Definitions:

Contained ruptures do not qualify.

Required:
Yes

Lowest Pre-Intubation Blood Pressure (for ruptured AAA repairs only) (EVAR)

Data Abstraction Instructions:

Indicate the lowest pre-intubation BP, after arrival in hospital, use systolic pressure.

Selections:

- Yes
  - Enter value in mmHg
- Not documented

Required:
Yes
Suffix:
mmHg
Minimum:
0
Maximum:
200

Mental Status (for ruptured AAA repairs only) (EVAR)

Data Abstraction Instructions:

Indicate the patient's mental status on arrival to operating room. If the patient is intubated upon arrival to the OR, enter Unconscious.

Selections:

- Yes
  - Normal (alert and oriented)
  - Disoriented to person, place, or time.
  - Unconscious
- Not documented

Required:
Yes

Cardiac Arrest (for ruptured AAA repairs only) (EVAR)

Data Abstraction Instructions:

Indicate if the patient was in cardiac arrest on arrival to operating room.

Selections:

- Yes
- No

Required:
Yes

Timeframe: Symptoms to Incision (for ruptured AAA repairs only) (EVAR)

Data Abstraction Instructions:

Record the time from the patients first symptoms until the surgical incision in hours. The time of symptom onset may be documented in the EMS records, ED records, or operative notes. If the time of symptom onset is not exact, enter as much information that is documented. For example, if the symptom onset is documented as "two days ago," enter 48 hours. If the time of symptom onset is not documented in the hospital documents, calculate the time of symptom onset from the time EMS made contact with the patient.

Selections:

- Yes
  - Enter value in hours
- Not documented

Required:
Yes
Minimum:
0

Maximum:
72

Timeframe: Admission to Incision (for ruptured AAA repairs only) (EVAR)

Data Abstraction Instructions:

Record the time from when the patient was admitted to the surgical incision in hours. If the patient was admitted through the ED, use the date and time the patient arrived to the ED.

Selections:

- Yes
  - Enter value in hours
- Not documented

Required:
Yes
Minimum:
0
Maximum:
24

Abdomen Explored (EVAR)

Data Abstraction Instructions:

Indicate if the surgeon explored the abdomen to evacuate a hematoma but not repair the rupture. Aneurysm was repaired endovascularly, but the abdomen was opened to remove the clot before leaving the OR.

Selections:

- Yes
- No

Required:
Yes

Procedure Aborted (EVAR)

Data Abstraction Instructions:

Indicate if the procedure was aborted prior to endograft placement (for any reason).

Selections:

- Yes
- No

Required:
Yes

Graft Body Diameter (EVAR)

Data Abstraction Instructions:

Enter the diameter of the main body graft.

Selections:

- Documented
  - Enter value in mm
- Not documented
- Graft Not Utilized

Supporting Definitions:

Body Size is diameter of most proximal portion of graft. To find the most accurate measurement use the Manufacturer's Device Catalog. These catalogs are located on the BMC2 website under Coordinator Resources>Vascular Surgery>Additional VS Abstraction Resources>EVAR Manufacturer Device Catalogs.

The graft body diameter may also be found in the operative note or the implant log.

Required:
Yes
Suffix:
mm
Minimum:
10
Maximum:
40

Right Distal Seal Zone Diameter

Data Abstraction Instructions:

Enter the diameter of the most distal portion of iliac treated with any covered stent such as iliac limbs, iliac extensions, contralateral limbs, ipsilateral limbs and bridge devices. Please note: a bridging device is essentially a flared iliac limb.

Selections:

- Yes
  - Enter diameter _____mm
- No

Supporting Definitions:

To find the most accurate measurement use the Manufacturer's Device Catalog. These catalogs are located on the BMC2 website under Coordinator Resources>Vascular Surgery>Additional VS Abstraction Resources>EVAR Manufacturer Device Catalogs. Depending on the manufacturer, the distal seal zone diameter may be labeled as: iliac endoprosthesis diameter, distal device diameter, iliac limb diameter or iliac leg diameter.

The distal seal zone diameter may also be found in the operative note or the implant log.

Required:
Yes

Left Distal Seal Zone Diameter

Data Abstraction Instructions:

Enter the diameter of the most distal portion of iliac treated with any covered stent such as iliac limbs, iliac extensions, contralateral limbs, ipsilateral limbs and bridge devices. Please note: a bridging device is essentially a flared iliac limb.

Selections:

- Yes
  - Enter diameter _____mm
- No

Supporting Definitions:

To find the most accurate measurement use the Manufacturer's Device Catalog. These catalogs are located on the BMC2 website under Coordinator Resources>Vascular Surgery>Additional VS Abstraction Resources>EVAR Manufacturer Device Catalogs. Depending on the manufacturer, the distal seal zone diameter may be labeled as: iliac endoprosthesis diameter, distal device diameter, iliac limb diameter or iliac leg diameter.
The distal seal zone diameter may also be found in the operative note or the implant log.

Required:
Yes

Graft Type (EVAR)

Data Abstraction Instructions:

Indicate type of graft used.

Selections:

- AFX
- Aneurx
- Aorfix
- Aptus
- Endologix
- Endurant
- Excluder
- Nellix
- Ovation iX (Trivascular)
- Powerlink
- Talent
- Unifit
- Zenith
- Other
- Graft Not Utilized

Required:
Yes

Graft Configuration

Data Abstraction Instructions:

Indicate graft configuration.
Selections:

- Aorto-bi-iliac
- Aorto-uni-iliac RT
- Aorto-uni-iliac LT
- Aorto-aortic
- Fenestrated
- Graft Not Utilized

Required:
Yes

Additional graft components (EVAR)

Data Abstraction Instructions:

Indicate if additional graft components were implanted other than iliac limbs, iliac extensions, stents or bridging devices. When selecting the option Iliac Branch Device, two additional fields will display. Enter the distal hypogastric (internal iliac) diameter and the distal external iliac diameter. This field is a multi-select field.

- An aortic cuff is an extension device used to provide a seal at the proximal aortic neck.
  - Enter suprarenal endograft or suprarenal extension as aortic cuff.
- Aortic screws are implanted through the aorta and fix the endograft to the aorta. Aortic screws stop the endograft from migrating. May also be call endo anchors.
- An Iliac Brach Device is a bifurcated devices that is implanted in the external iliac artery and they internal iliac artery (hypogastric). An additional component is implanted into the hypogastric.

Selections:

- Aortic cuff
- Aortic screws
- Right iliac branch device
  - **Distal hypogastric diameter**
    - Documented
      - Enter value (mm)
    - Not Documented
  - **Distal external iliac diameter**
    - Documented
      - Enter value (mm)
    - Not Documented
- Left iliac branch device
  - **Distal hypogastric diameter**
    - Documented
      - Enter value (mm)
    - Not Documented
  - **Distal external iliac diameter**
    - Documented
      - Enter value (mm)
    - Not Documented
- Additional main body
- Other

Required:
Yes

Renal Status

Data Abstraction Instructions:

Indicate renal status and interventions, check all that apply.

Selections:

- Yes
  - Patent, No Intervention
  - Chronically Occluded
  - Purposely Occluded
  - De-Branch/Bypass
  - Stent
  - Chimney
  - Fenestrated/scallop
  - Side Branch From Graft
  - Accessory Renal Artery Covered
- No
- Not documented

Supporting Definitions:

Patent, No Intervention = No intervention required to maintain renal artery patency.

Chronically Occluded = Renal artery was chronically occluded prior to procedure.

Purposely Occluded = Renal artery was intentionally occluded during the procedure.

De-Branch/Bypass = Additional intra-operative surgery to bypass renal or visceral vessels.

Stent = Renal stent placed to maintain renal artery patency.

Chimney = Placement of a bare metal/covered stent that maintains renal artery patency where the graft occludes the orifice of the renal(s).

Fenestrated/scallop = Hole or orifice in the graft to maintain renal or visceral vessel patency.

Side Branch From Graft = Custom made grafts with an additional smaller graft off the main body to maintain renal or visceral vessel patency.

Accessory Renal Artery Covered = Multiple arteries to the kidney are present and one (or more) is covered by the graft.

Additional covered stents can be (and usually are) added to the fenestrated grafts at the scalloped and side branches to maintain renal patency. The side arm branches may or may not reach beyond the aneurysm by themselves and a covered graft may bridge between the main body and renal artery.
Required:
Yes

Hypogastric Coiled/Plugged

Data Abstraction Instructions:

Indicate if the patient had coiling of the hypogastric arteries, either pre procedure or during the procedure.

Selections:

- Yes
  - Coiled/Plugged Pre-op
  - Coiled/Plugged Intra-op
    - Unilateral
    - Bilateral
- No

Required:
Yes

Hypogastric Intentionally Covered

Data Abstraction Instructions:

Indicate if the Hypogastric was intentionally covered with extension of graft to treat distal aneurysm extent. This would be planned prior to procedure.

Selections:

- Yes
  - Unilateral
  - Bilateral
- No
- Graft Not Utilized

Required:
Yes

Hypogastric Unintentionally Covered

Data Abstraction Instructions:

Indicate if the Hypogastric was inadvertently covered with extension of graft not necessary to treat distal aneurysm extent.

Selections:

- Yes
  - Unilateral
  - Bilateral
- No
- Graft Not Utilized

Required:
Yes

Arterial Injury

Data Abstraction Instructions:

Indicate if an arterial injury or occlusion occurred, requiring an intervention, and document what intervention was performed.

Selections:

- Yes
  - Select option for injury
    - Femoral
    - Iliac
    - Renal
    - Aorta
    - Multiple
  - Select option for repair
    - Stent/PTA

        - Stent/Graft
        - Open Repair
        - Not documented
    - No

Required:
Yes

Intra-Operative Revision Needed

Data Abstraction Instructions:

Indicate if a graft revision was performed during the procedure.

Selections:

- Yes
- No

Supporting Definitions:

A revision may include an unplanned limb extension, the addition of a proximal cuff, or a main body extension.

Required:
Yes

Endoleak at Completion

Data Abstraction Instructions:

Indicate if there was an endoleak at the end of the procedure. If an endoleak is identified and then repaired and is no longer present at the end of the procedure, enter No.

Selections:

- Yes
    - Attachment site (Type 1) (Proximal or distal attachment site leak)
    - Branch (Type II) (Retrograde filling of sac via lumbars, IMA or accessory renals)
    - Mid Graft (Type III) (filling of sac via leak at component overlap sites or fabric tear)
    - Indeterminate
- No

Required:
Yes

Closure for Groin Access

Data Abstraction Instructions:

Enter the closure used for groin access.

Selections:

- percutaneous
    - manual
    - perclose
    - angioseal
    - mynx
    - starclose
    - Exoseal
    - compression device
    - other VCD
- open
    - suture
        - absorbable
        - permanent
        - Not documented
    - staples
    - skin glue
    - other

Supporting Definitions:

Percutaneous = enter the closure that was used for percutaneous groin access (a small incision is made in the skin and the micropuncture needle is inserted into the femoral artery).
Other VCD = Enter other VCD if the vascular closure device (VCD) used to close the percutaneous groin access is not on the list.
Open = enter the closure used for open groin access (surgical cut-down). Include all layers of closure - muscle, subcutaneous, and skin.

Required:
Yes

Additional Planned Procedures

Data Abstraction Instructions:

Indicate if additional procedures were performed.

Selections:

- Yes
  - Femoral Endarterectomy
  - Thromboembolectomy
  - Other Arterial Reconstruction
- No

Required:
Yes

Conversion to Open

Data Abstraction Instructions:

Indicate if the procedure had to be converted to an open procedure and identify reason. If the EVAR is converted to an open AAA repair, the open AAA must be entered as an additional procedure within the discharge record.

Selections:

- Yes
  - Unable to deploy appropriately
  - Endoleak
- No

Required:
Yes

Fluoroscopic Time

Data Abstraction Instructions:

Enter the length of time, in minutes, that fluoroscopy was used during the EVAR procedure.

Selections:

- Enter value (mins)
- Not documented

Required:
Yes

Air Kerma

Data Abstraction Instructions:

Enter the Air kerma for the EVAR procedure.

Selections:

- Documented
  - Enter value in textbox
    - Select an option
    - mGy
    - Gy
- Not documented

Supporting Definitions:

Air kerma is used to characterize the intensity of the x-ray beam[2].

Reference: Dixon, R.G., FSIR, & Ogden, K.M. (2016, August). A field guide to radiation safety terminology: An overview of key radiation dosimetric quantities and terms. Endovascular Today,15(8), 48-52. https://evtoday.com/articles/2016-aug/a-field-guide-to-radiation-safety-terminology

Required:
Yes
Minimum:
0
Maximum:
100

Kerma Area Product (Dose Area Product)

Data Abstraction Instructions:

Enter the Kerma-Area Product (KAP) for the EVAR procedure.

Selections:

- Documented
  - Enter value in textbox
    - Select option

- Gy/cm^2
- dGy/cm^2
- cGy/cm^2
- mGy/cm^2
- µGy/M^2

- Not documented

Supporting Definitions:

KAP may also be called the dose area product (DAP). The KAP or DAP is the product of the intensity of the radiation beam (air kerma) multiplied by the area of the beam. It is the appropriate way to measure the total amount of radiation delivered to the patient.

Reference: Dixon, R.G., FSIR, & Ogden, K.M. (2016, August). A field guide to radiation safety terminology: An overview of key radiation dosimetric quantities and terms. *Endovascular Today,15*(8), 48-52. https://evtoday.com/articles/2016-aug/a-field-guide-to-radiation-safety-terminology

Required:
Yes
Minimum:
0
Maximum:
10000

Open Thrombectomy (OT)

Qualifying Procedures:

- Open Thrombectomy of the upper and lower extremities Urgent or emergent case
- Indication of Acute Limb Ischemia (ALI)
  - Includes a diagnosis of acute-on-chronic limb ischemia
- The surgeon made an arteriotomy (an incision) into the artery or graft
- Thrombus was removed manually or with a Fogarty
- The procedure might be documented as a thrombectomy or an embolectomy if the clot traveled to that location
- Independent case
  - The Open Thrombectomy was not performed at the same time as another VS or PVI procedure
- Patch angioplasty, aneurysm, or pseudoaneurysm repair as a concomitant procedure to an open thrombectomy.
  - Enter these concurrent procedures under the Locations section of the website.

Open Thrombectomy procedures that do not qualify:

- Open Thrombectomy with the Indication of Critical Limb Ischemia (CLI)
- An Open Thrombectomy that was an outcome of another procedure within the same hospitalization or discharge
  - Enter this open Thrombectomy as an outcome of the prior procedure (if applicable)
- If the Open Thrombectomy is done at an open bypass's insertion or origin site, you will not enter this as an open Thrombectomy case.
  - It would be considered part of a typical open bypass procedure and preparing the artery for anastomosis and would not be entered in Locations
- An Open Thrombectomy performed at the same time as another VS or PVI procedure and in a different location as the VS or PVI procedure
  - Enter this open Thrombectomy in Locations of the concomitant VS or PVI procedure as an additional procedure performed
- A qualifying Open Thrombectomy where the procedure was aborted BEFORE the primary incision was made.
- An Open Thrombectomy was performed because the patient developed thrombus

Timeframe: Symptoms to incision (OT)

Data Abstraction Instructions:

Record the time from symptom onset until surgical incision. The time of symptom onset may be documented in the EMS records, ED records, or operative notes. If the time of symptom onset is not exact, enter as much information that is established. For example, if the symptom onset is documented as "two days ago," enter 48 hours. If the time of symptom onset is not documented in the hospital documents, calculate the time of symptom onset from the time EMS made contact with the patient.

Selections:

- Enter value (hours)
- Not Documented

Required:
Yes

Timeframe: Presentation to incision (OT)

Data Abstraction Instructions:

Record the time from arrival at the hospital until surgical incision.

Selections:

- Enter value (hours)
- Not documented

Required:

Yes

Prior lytic procedure (OT)

Data Abstraction Instructions:

Indicate if the patient had a prior lytic procedure during the current hospitalization.

Selections:

- Yes
- No

Required:
Yes

Vessel location (OT)

Data Abstraction Instructions:

Indicate vessel location of the procedure. If an open thrombectomy is performed on multiple vessels in the same surgery, enter the location of the skin incision.

Selections:

Choose the artery location from the drop down list.

Required:
Yes

Vessel closure (OT)

Data Abstraction Instructions:

Indicate how the vessel at the site of thrombectomy was closed.

Selections:

- Primary
- Patch
- Not documented

Required:
Yes

Completion angio (OT)

Data Abstraction Instructions:

Indicate if a completion angio was performed at the end of the procedure and if flow through the thrombectomized vessel was normal or abnormal.

Selections:

- Yes
  - Normal
  - Abnormal
- No

Required:
Yes

Concomitant endarterectomy (OT)

Data Abstraction Instructions:

Indicate if an endarterectomy was performed at the same time as the thrombectomy.

Selections:

- Yes
- No

Required:
Yes

Data Fields for All Procedure Types

Anesthesia Type

Data Abstraction Instructions:

Enter the type of anesthesia administered during the procedure.

Selections:

- Local
- Epidural
- Regional
- Spinal
- General
- Epidural + General
- MAC

Required:
Yes

Antibiotics Pre Procedure

Data Abstraction Instructions:

Indicate if an antibiotic was given within one hour of incision (2 hours for Vancomycin), and an antibiotic redosed +/- 30 minutes of the 4-hour or 6-hour mark.

Selections:

- Yes
  - Cefazolin
    - Redosed (Q4 hours)
      - Yes
      - No
  - Clindamycin
    - Redosed (Q6 hours)
      - Yes
      - No
  - On scheduled antibiotic
  - Other
- No

Supporting Definitions:

On scheduled antibiotic = An inpatient did not receive the pre procedure antibiotic within 1 hour of incision time (2 hours for Vancomycin) because the patient is on a scheduled antibiotic.

Required:
Yes

Skin Preparation

Data Abstraction Instructions:

Enter the skin prep used to prep the skin before the incision was made. Select all that apply.

Selections:

- Chlorhexidine
- Alcohol
- Iodine
- Chlorhexidine + Iodine
- Chlorhexidine + Alcohol
- Iodine + Alcohol

Required:
Yes

Contraindicated to Chlorhexidine & Alcohol Skin Preparation

Data Abstraction Instructions:

Indicate if there is a contraindication to Chlorhexidine & Alcohol skin prep (for example: allergy, open wound, sensitivity, etc.).

Selections:

- Yes
- No

Required:
Yes

Glucose (peak)

Data Abstraction Instructions:

Enter the highest blood glucose value documented between the procedure start time and the procedure stop time.

Selections:

- Yes
  - Enter value in mg/dL
- Not documented

Required:

Yes
Suffix:
mg/dL

Nadir body temperature

Data Abstraction Instructions:

Enter the lowest body temperature in Celsius degrees that is taken after the procedure start time and before the procedure end time.

Selections:

- Yes
  - Enter value in Celsius
- Not documented

Required:
Yes
Suffix:
Celsius
Minimum:
30
Maximum:
40

Crystalloids

Data Abstraction Instructions:

Enter the total volume of intravenous crystalloids, in milliliters (mL), and/or Plasma-lyte infused between the procedure start time and the procedure stop time. Also, document Plasma-lyte as Other IV Hydration under Meds Given During Procedure. Examples of crystalloids include Normal Saline, .45 Normal Saline, D5W, and Lactated Ringer's.

Selections:

- Yes
  - Enter value in ml
- Not documented

Required:
Yes
Suffix:
ml
Maximum:
20000
Soft Maximum:
10000

Estimated Blood Loss (EBL)

Data Abstraction Instructions:

Enter the estimated blood loss during the procedure. If the EBL in >5000ml, enter 5000.

Selections:

- Yes
  - Enter EBL in ml
- Not documented

Required:
Yes
Suffix:
ml
Maximum:
5000
Soft Maximum:
1000

ASA (American Society of Anesthesiologists) Class

Data Abstraction Instructions:

Enter the ASA Class as documented by the anesthesia team.

Selections:

- Does not apply
- Class 1 – normal/healthy
- Class 2 – mild systemic disease
- Class 3 – severe systemic disease
- Class 4 – severe systemic disease that is a constant threat to life
- Class 5 – moribund/not expected to survive without operation

Supporting Definitions:

Does not apply = the anesthesia team is not involved in the patients care during the procedure.
Required:
Yes

Contrast Types

Data Abstraction Instructions:

Enter the type of contrast that was used during the procedure. Select all that apply.

Selections:

- Nonionic, low-osmolar
- Nonionic, Iso-osmolar
- Ionic, hyperosmolar
- Ionic, low-osmolar
- Unknown/Investigational contrast agent
- Gadolinium
- Carbon Dioxide (CO2)
- None

Supporting Definitions:

Commonly used Contrast Agents

- Nonionic low-osmolar
  - Omnipaque, Isovue, Optiray, Ultravist, Oxilam
- Nonionic Iso-osmolar
  - Visipaque
- Ionic, hyperosmolar
  - Hypaque, Conray
- Ionic, low-osmolar
  - Hexabrix
- Unknow/Investigational contrast agent
- Gadolinium
- Carbon Dioxide (CO2)

Required:
Yes

Total IV Contrast Used

Data Abstraction Instructions:

Enter the volume of contrast (ionic & non-ionic) used during the procedure in milliliters (ml). This should be the total used between the start of procedure and end of procedure. If half dose contrast was used during the procedure, record only the dose of the contrast given, not the total volume. If CO2 contrast is used, do not include the volume of CO2 used in the total contrast.

Selections:

- Yes
  - Enter value in ml
- Not documented

Required:
Yes
Suffix:
ml
Minimum:
0
Maximum:
500

Heparin Administered

Data Abstraction Instructions:

Enter the total dose(s)/bolus(es) of unfractionated heparin units that were given during the procedure. If heparin was given and you cannot find documentation of the dose given enter Not documented.

Selections:

- Yes
  - Total Heparin Dosage
  - Documented
    - Enter value in units
  - Not documented
- No

Supporting Definitions:

Do not include heparin drip doses in this value. Include only the bolus doses.

Required:
Yes

Suffix:
units
Maximum:
40000

Peak Intra Procedure Activated Clotting Time (ACT)

Data Abstraction Instructions:

Enter the highest measurement of ACT (peak) in seconds that was taken between the procedure start time and the procedure stop time. Enter "Not documented" if peak ACT or clotting measurement was not drawn/documented in the patient record.

Selections:

- Yes
  - Enter value in seconds
- Not documented

Supporting Definitions:

Activated clotting time (ACT) should be measured after the heparin IV bolus is given. In long cases, as clinically indicated, additional heparin boluses may be given, and subsequent ACT measurements may be done. The ACT recorded here must be done during the procedure and NOT at the end of the procedure. There must be some part of the intervention procedure performed after the ACT value for it to qualify for peak ACT.

Required:
Yes
Suffix:
seconds
Maximum:
600

End of procedure ACT

Data Abstraction Instructions:

Enter the activated clotting time (ACT) at the conclusion of the procedure, during closure or before the sheath is changed out at the end of the case. For OR cases, enter the ACT that is drawn approximately an hour from the end of the procedure.

Selections:

- Yes
  - Enter value in seconds
- Not documented

Required:
Yes
Suffix:
seconds
Minimum:
50
Maximum:
600

Locations

Each procedure type can have one or many locations. For vascular surgery procedures, enter the PVI or open procedure that is not a normal part of the main procedure. For example, if an EVAR was performed. A completion angiogram shows an occlusion in the left popliteal artery. The surgeon performs an open thrombectomy on the popliteal artery. You will enter the open thrombectomy of the popliteal artery under Locations of the EVAR procedure.

Vessel Location

Data Abstraction Instructions:

Indicate vessel location of the procedure.

Selections:

Choose Vessel Location from the drop down list

Required:
Yes

Lesion Segment Area

Data Abstraction Instructions:

Indicate if the lesion is proximal, mid, distal, or diffuse. If the lesion treated involves more than one segment, check diffuse (e.g., proximal and mid).

Selections:

- Proximal
- Mid
- Distal
- Diffuse
- Not documented

Required:
Yes

PVI Procedure Performed

Data Abstraction Instructions:

Indicate procedure performed. Select all that apply.

Selections:

- Aspirational Atherectomy (JetStream, Pathways) = Asp-Ather
- Mechanical Thrombectomy (Angiojet) – M-Throm
- Balloon = BA
- Cryoballoon = Cryo-B
- CTO device = CTO
- Cutting Balloon = CB
- Directional Atherectomy (Fox hollow, SilverHawk) = D-Ather
- Distal Protection Device (balloon) = DPD-B
- Distal Protection Device (filter) = DPD-F
- Drug Coated Balloon = DCB
- Flow-wire = FW
- Infusion Catheter (Benephit) = Inf-Cath
- Intravascular Ultrasound = IVUS
- Laser Atherectomy (Excimer laser) = L-Ather
- Lysis (Note: do not record lysis only procedures). Select this box if lytic agents were used during the procedure in addition to any other device. Do not record procedures if only angiojet or fogarty catheter was used.) = LYS
- Not crossed with a device = ND
- Not crossed with a wire = NW
- Other Atherectomy (ClearPath) = Oth-Ather
- Open Endarterectomy
- Open Thrombectomy
- Rotational/Orbital Atherectomy (DiamondBack) = R-Ather
- Re-Entry Catheter (Pioneer, Outback) = Re-Ent-Cath
- Research (whether the procedure was done for research purpose only) = Research
- Scoring Balloon (Angiosculpt) = S-BA
- Stent = STNT
- Thrombus Aspiration (Pronto, Export, Aspire, Diver, Xtract, Fetch, QuickCat) – Throm-Asp
- Vascular Embolectomy = Vasc-E (Fogarty)

Required:
Yes

Bypass Graft

Data Abstraction Instructions:

Indicate if the PVI procedure is performed on an arterial bypass graft.

Selections:

- Yes
- No

Required:
Yes

Graft Type

Data Abstraction Instructions:

Select the type of bypass graft: synthetic or vein.

Selections:

- Synthetic
- Vein
- Not Documented

Required:
Yes

Graft Origin

Data Abstraction Instructions:

Select the bypass graft origin (inflow) using the vessel drop down box.

Selections:

- Select artery name from the drop down list

Required:
Yes

Graft Insertion

Data Abstraction Instructions:

Select the bypass graft insertion (outflow) using the vessel drop down box.

Selections:

- Select artery name from the drop down list

Required:
Yes

Lesion Length

Data Abstraction Instructions:

Visual estimate of the length of the lesion. If not dictated, use balloon/stent length. For tandem lesions, add lengths together. For diffuse disease use the length of the treated segment.

Selections:

- Enter value in mm

Required:
No
Suffix:
mm
Minimum:
0
Maximum:
1000

Heavy Calcium

Data Abstraction Instructions:

Indicate if moderate to heavy calcium is documented as being present in the lesion.

Selections:

- Yes
- No

Required:
Yes

In-stent Restenosis

Data Abstraction Instructions:

Indicate if the lesion that is being treated is within a previously place stent.

Selections:

- Yes
- No

Required:
Yes

Thrombus

Data Abstraction Instructions:

Indicate if thrombus is present before the PVI intervention.

Selections:

- Yes
- No

Supporting Definitions:

Thrombus is suggested by certain angiographic features: haziness, reduced contrast density or contrast persistence, irregular lesion contours or globular filling defects.

Required:
Yes

Pre Stenosis % (0-100)

Data Abstraction Instructions:

Record the preprocedural percent of stenosis for each segment treated. If a range is given, take the highest value. If unavailable, choose not documented.

Selections:

- Yes
  - Enter value (0 - 100%)
- Not documented

Required:
Yes
Suffix:
%
Maximum:
100

Post Stenosis % (0-100)

Data Abstraction Instructions:

Record the postprocedural percent of stenosis for each segment treated. If a range is given, take the lowest value. If not recorded, choose not documented.

Selections:

- Yes
  - Enter value (0 - 100%)
- Not documented

Required:
Yes
Suffix:
%
Maximum:
100

Final Balloon Diameter

Data Abstraction Instructions:

Indicate the diameter, in millimeters, of the final balloon used to treat this lesion. If not recorded, enter not documented.

Selections:

- Yes
  - Enter value in mm
- Not documented

Required:
Yes
Suffix:
millimeters
Minimum:
1.5
Maximum:
30

Stents

Stent Name

Data Abstraction Instructions:

Select the brand name of the stent used in the PVI procedure from the drop down list.

Selections:

- Choose Stent name

Supporting Definitions:

Other = The name of the stent is not in the list.

Required:
Yes

Stent Diameter

Data Abstraction Instructions:

Enter the diameter of the stent.

Selections:

- Enter Stent Diameter in mm

Required:
Yes
Suffix:
mm
Minimum:
2
Maximum:
30

Stent Length

Data Abstraction Instructions:

Enter the length of the stent.

Selections:

- Enter Stent Length in mm

Required:
Yes
Suffix:
mm
Minimum:
1
Maximum:
250

Vascular Access

Enter the vascular access that was established that is not a normal part of the procedure. For example, if an arterial line was put in because the patient was crashing, Enter the arterial line under Vascular Access. Do not enter the bilateral femoral vascular access for EVAR procedures. This is a normal part of the EVAR.

Vascular Access Site(s)

Data Abstraction Instructions:

Indicate location of vascular access.

Selections:

- Select artery from the drop down list

Required:
Yes

Vascular Access Type

Data Abstraction Instructions:

Indicate vascular access type.

Selections:

- Percutaneous
- Surgical Cutdown

Supporting Definitions:

Percutaneous = vascular access obtained via skin puncture without direct visualization of artery.

Surgical cutdown = access via skin incision with direct visualization of the underlying structures.

Required:
Yes

Vessel Accessed

Data Abstraction Instructions:

Indicate if the native artery or bypass graft was accessed for the current procedure.

Selections:

- Native Artery
- Bypass Graft

Required:
Yes

Access Guidance

Data Abstraction Instructions:

Indicate if guidance was used for vascular access. If both are utilized, select ultrasound.

Selections:

- Yes
  - Fluoro
  - Ultrasound
- No

Required:
Yes

Access Approach

Data Abstraction Instructions:

Enter the sheath direction at site of insertion. If more than one access was attempted, record the access approach that was used to gain access rather than the failed access approach.

Selections:

- Antegrade
- Retrograde
- Both

Supporting Definitions:

Both = the sheath was utilized in both the retrograde and antegrade direction at the same insertion site.

Required:
Yes

Sheath Size

Data Abstraction Instructions:

Indicate the largest size of the sheath placed during the procedure. Include sheaths placed at the end of the procedure.

Selections:

- Enter value (French)

Required:
Yes
Suffix:
French
Minimum:
3
Maximum:
30

Sheath Removed

Data Abstraction Instructions:

Indicate if the sheath was removed and the vascular closure type. In lysis procedures in which the sheath is left in at the end of the procedure, select yes for "Sheath Removed" and indicate the timeframe/method of eventual removal.

Selections:

- Yes
- No

Required:
Yes

Vascular Closure Type

Data Abstraction Instructions:

Indicate the arterial closure methods used regardless of whether or not they provided hemostasis. Note: If more than one vascular closure type per access site was used, select all that were used.

Selections:

- Manual: no device or a mechanical type was used, e.g., manual pressure by the personnel pulling the sheath.
- Perclose
- Angioseal
- Mynx
- Starclose
- Surgical
- Exoseal
- Compression Device (i.e.: Femstop, C Clamp, TR Band)
- Boomerang
- Hemostatic Patch
- FISH
- Vascade

Required:
Yes

Sheath Removal Time

Data Abstraction Instructions:

Indicate time between end of procedure and sheath removal. In lysis procedures in which the sheath is left in at the end of the procedure, select yes for "Sheath Removed" and indicate the timeframe/method of eventual removal.

Selections:

- 0-3 hours
- 3-24 hours
- >24 hours

Required:
Yes

Outcomes During Procedure

Death/Cause (ODP)

Data Abstraction Instructions:

Indicate if the patient died in association with this procedure while in the lab/OR. If yes, indicate cause of death.

Selections:

- Yes
  - Cardiovascular (includes AMI, bleed, stroke, cardiogenic shock)
  - Hemorrhage
  - Multisystem Organ Failure (includes acute lung injury and systematic inflammatory response system)
  - Other (include neurologic, renal, liver, GI, cancer)
  - Unknown cause of death
- No

Supporting Definitions:

Select no if the patient was alive throughout the procedure.

Required:
Yes

Dissection (Not Repaired) (ODP)

Data Abstraction Instructions:

Indicate if there was a dissection that was clinically significant (causing a decrease in blood flow) or residual blood flow limiting dissection at the intervention/procedure site.

Selections:

- Yes
- No

Supporting Definitions:

The appearance of contrast material outside the expected luminal dimensions of the target vessel and extending longitudinally beyond the length of the lesion. If the dissection is successfully treated with, e.g., angioplasty or stent, then it should not be considered as a complication. It would be considered a complication if the patient has a dissection identified during a return trip to the lab.

Required:
Yes

Myocardial Infarction (MI) (ODP)

Data Abstraction Instructions:

Indicate if the patient had a myocardial infarction during the vascular procedure while the patient was still in the lab or operating room.

Selections:

- Yes
- No

Supporting Definitions:

Enter MI if the patient is diagnosed with Type 2 Myocardial Infarction, Type 1 NSTEMI, or STEMI. If no diagnosis is documented, enter MI if the patient has an elevated cardiac troponin value(s) greater than the 99th percentile URL (upper reference limit) with a rise and/or fall in troponin and at least one of the following:

- New ischemic EKG changes (S-T elevations, S-T depression, pathological Q waves)
- Shortness of breath
- Thrombus seen on angiogram or autopsy
- An Echo/MRI/Stress test that is positive for ischemia
- Chest pain
- Nausea

Reference: Thygesen, K., Alpert, J. S., Jaffe, A. S., Chaitman, B. R., Bax, J. J., Morrow, D. A., White, H. D., & The Executive Group on behalf of the Joint European Society of Cardiology (ESC)/American College of Cardiology (ACC)/American Heart Association (AHA)/World Heart Federation (WHF) Task Force for the Universal Definition of Myocardial Infarction. (2018, November 13). *Fourth Universal Definition of Myocardial Infarction (2018)*. Fourth universal definition of myocardial infarction (2018). Retrieved August 22, 2022, from https://www.ahajournals.org/doi/epub/10.1161/CIR.0000000000000617

Required:
Yes

Cardiac Arrest

Data Abstraction Instructions:

Indicate if the patient was in cardiac arrest during the procedure. Ener No if the patient came into the room in cardiac arrest, as an example ruptured AAA arresting on arrival.

Selections:

- Yes
- No

Required:
Yes

Embolus (ODP)

Data Abstraction Instructions:

Indicate if the patient is identified to have an embolus during the procedure. If yes, indicate if it was treated successfully.

Selections:

- Yes
  - Successful
  - Unsuccessful
- No

Supporting Definitions:

An embolus (compromised of atherosclerotic debris and / or blood clot) moves through the blood vessels until it reaches a vessel that is too small to let it pass.

Required:
Yes

Thrombus (ODP)

Data Abstraction Instructions:

Indicate if a blood clot formed during the procedure, within the treated vessel, which limits distal flow. Do not include any thrombus that was present at the beginning of the procedure.

Selections:

- Yes
- No

Required:
Yes

Stent/Graft Thrombosis (ODP)

Data Abstraction Instructions:

Indicate if a blood clot formed within the stent/graft during the procedure that limits distal blood flow. If yes, indicate if it was treated successfully.

Selections:

- Yes
  - Successful
  - Unsuccessful
- No

Required:
Yes

Vessel Perforation

Data Abstraction Instructions:

Indicate if there was a vessel perforation (venous or arterial) during the procedure. If the perforation was treated successfully, enter the treatment option to repair the perforation. Select all treatment options that apply.

Selections:

- Yes
  - Successful
    - Balloon
    - Covered stent
    - Bare metal stent
    - External compression
    - Reversal of anticoagulation
    - No treatment
  - Unsuccessful
- No

Supporting Definitions:

Required:
Yes

TIA/Stroke (ODP)

Data Abstraction Instructions:

Indicate if the patient had a TIA or Stroke while the patient is in the procedure area.

Selections:

- Yes
- No

Supporting Definitions:

A TIA is defined as an abrupt loss of neurological function with complete return of function within 24 hours. A stroke is defined as a loss of neurological function caused by an ischemic event that is severe enough to leave a persistent deficit for greater than 24 hours.

Required:
Yes

Transfusion (ODP)

Data Abstraction Instructions:

Indicate if the patient received any transfusion for any reason during the procedure. If yes, select the type of transfusion: PRBC, Whole blood, Platelets, FFP, Other (e.g., Cryoprecipitate, Factor VIII infusion). Select all that apply.

Selections:

- Yes
  Select type of transfusion
  - PRBC,
    - if yes, enter the number of units for PRBC's (enter # of packed red blood cells 1, 2, 3, etc.)
  - Platelets
  - FFP
  - Other
- No

Supporting Definitions:

NOTE: Return of cell saver product is not captured as a transfusion.

Required:
Yes
Minimum:
1
Maximum:
20

Vascular Access Complications (ODP)

Data Abstraction Instructions:

Indicate vascular complications at the access site requiring transfusion, prolonged hospital stay, causing a drop in hemoglobin 3.0 gm/dl, or any access site complications requiring surgical repair. Select all that apply.

Selections:

- Yes
  - Retroperitoneal hematoma
  - Pseudo-aneurysm
  - Hematoma at access site
  - Bleeding at access site
  - AV fistula
  - Acute thrombosis
  - Surgical repair of the vascular access site
  - Other
- No

Supporting Definitions:

Retroperitoneal hematoma = bleeding into the anatomical space located behind the abdominal or peritoneal cavity.

Pseudoaneurysm = the occurrence of a disruption and dilation of the arterial wall without identification of the arterial wall layers at the site of the catheter entry demonstrated by arteriography or ultrasound.

Hematoma at access site = blood loss at the site of arterial or venous access due to perforation of a traversed artery or vein that causes at one or more of the following:

- transfusion
- prolonged hospital stay
- drop in hemoglobin > 3.0 gm/dl

Bleeding at access site = Blood loss associated with decreased Hgb (greater than or equal to 3.0 gm/dl) and/or causes an increased length of hospital stay. Without other obvious source (GI, GU, operative, or hemolysis) that is attributable to intraprocedural blood loss (e.g., during equipment changes) should be considered bleeding at the access site even if no hematoma is palpable or documented on imaging studies.

AV fistula = A connection between the access artery and the accompanying vein that is demonstrated by arteriography or ultrasound and most often characterized by a continuous bruit.

Acute thrombosis = Total obstruction of the artery by thrombus most commonly at the site of access.

Surgical repair of the vascular access site = such as surgical closures, exploration of the arteriotomy site, balloon angioplasty or covered stent (JOMED GraftMaster) placement.

Other = a vascular access complication that is not in this list.
Required:
Yes

Amputation (ODP)

Data Abstraction Instructions:

Indicate if an amputation is performed at any time during the procedure.

Selections:

- Yes
  Select type of amputation
  - Left hip disarticulation
  - Left AKA
  - Left BKA
  - Left foot
  - Left metatarsal
  - Left digit
  - Right hip disarticulation
  - Right AKA
  - Right BKA
  - Right foot
  - Right metatarsal
  - Right digit
- No

Required:
Yes

Compartment Syndrome (ODP)

Data Abstraction Instructions:

Indicate if the patient developed compartment syndrome at any time during the procedure. Include fasciotomy for prophylaxis.

Selections:

- Yes
- No

Supporting Definitions:

Compartment syndrome is defined as compression of nerves and blood vessels within an enclosed space which leads to muscle and nerve damage and problems with blood flow.

Required:
Yes

Outcomes Post Procedure

All outcomes from the end of the procedure through discharge are captured here. In discharges with multiple procedures, outcomes should be included on the procedure they follow so the record reads like a book.

Death/Cause (OPP)

Data Abstraction Instructions:

Indicate if the patient died in association with this hospitalization. If yes, indicate cause of death.

Selections:

- Yes
  - Cardiovascular (includes AMI, bleed, stroke, cardiogenic shock)
  - Hemorrhage
  - Multi System Organ Failure (includes acute lung injury, and systemic inflammatory response system)
  - Other (include neurologic, renal, liver, GI, cancer)
  - Unknown cause of death
- No

Supporting Definitions:

Select no if the patient was alive throughout the hospitalization.

Required:
Yes

Comfort care measures implemented

Data Abstraction Instructions:

Indicate if care was withdrawn or comfort care measures were implemented prior to death. If so, indicate the date.

Selections:

- Yes
  - Enter date
- No

Required:
Yes

Stay in ICU

Data Abstraction Instructions:

Indicate the length of stay in the ICU post procedure. Include any days in the ICU for any reason.

Selections:

- Yes
  - Enter value in days
- No

Supporting Definitions:

Indicate value in days, whole numbers. Less than or equal to 24 hours equals one day, greater than 24 hours up to 48 hours equals two days, etc.

Required:
Yes
Suffix:
days
Minimum:
1
Maximum:
100

Vasopressors Post Operatively

Data Abstraction Instructions:

Document if dopamine ≥ 5 mcg/kg/min, or Neo-Synephrine, Levophed, epinephrine, vasopressin, or other IV vasopressor was administered post procedure.

Selections:

- Yes
- No

Required:
Yes

Respiratory

Data Abstraction Instructions:

Indicate if the patient had any respiratory issues post procedure.

Selections:

- Ventilator (continued after leaving OR)
- Reintubation (required after initially extubated)
- None

Supporting Definitions:

If a patient was not intubated for the procedure and requires intubation post procedure, it is not captured as an outcome here. Do not include elective reintubation for additional procedures.

Required:
Yes

Myocardial Injury

Data Abstraction Instructions:

Indicate if the patient suffered any type of myocardial injury post procedure, including an Acute Myocardial Injury, Type 2 myocardial infarction, Type 1 NSTEMI or STEMI. If Yes is entered, indicate the date of the first elevated troponin value and the peak troponin value. **The peak troponin value should be obtained within 30 days of the procedure.**

Selections:

- Yes
  - Enter date of first occurrence post procedure _____
  - Enter type of injury:
    - Acute Myocardial Injury
    - Type 2 Myocardial Infarction
    - Type 1 NSTEMI
    - STEMI
    - Not documented
- No

Supporting Definitions:

Myocardial ischemia = The patient has one or more of the following:

- Chest pain
- Nausea
- Shortness of breath
- new ischemic EKG changes (S-T elevations, S-T depression, pathological Q waves)
- An Echo/MRI/Stress test that is positive for ischemia
- Thrombus seen on angiogram or autopsy

Acute Myocardial Injury = Elevated cardiac troponin value(s) greater than the 99th percentile URL (upper reference limit) with a rise and/or fall in troponin **without** myocardial ischemia. Some causes of an Acute Myocardial Injury are hypertension, acute heart failure, or myocarditis.

Type 2 Myocardial Infarction = Elevated cardiac troponin value(s) greater than the 99th percentile URL (upper reference limit) with a rise and/or fall in troponin **with** myocardial ischemia. With Type 2 Myocardial Infarction, a supply and demand imbalance is causing a stressor to the heart. Some causes of Type 2 Myocardial Infarction are severe hypertension, sustained tachyarrhythmias, hemorrhagic shock/anemia, sepsis, pulmonary embolism, hypoxia, respiratory failure, or heart failure.

Type 1 NSTEMI (Non-ST Elevation Myocardial Infarction) = Elevated cardiac troponin value(s) greater than the 99th percentile URL with a rise and/or fall in troponin **with** myocardial ischemia related to atherosclerotic plaque disruption, which causes a complete or partial blockage in the coronary artery. The EKG during an NSTEMI will not show ST elevations.

STEMI (ST Elevation Myocardial Infarction) = Elevated cardiac troponin value(s) greater than the 99th percentile URL with a rise and/or fall in troponin **with** myocardial ischemia related to atherosclerotic plaque disruption, which causes a complete or partial blockage in the coronary artery. The patient having a STEMI will develop new ST-segment elevations in 2 contiguous leads or new bundle branch blocks with ischemic repolarization patterns.

Not documented = The type of injury is not documented, or there is not sufficient information recorded to determine what type of injury the patient suffered.

No =

- A single abnormal troponin value was found without other criteria for myocardial injury.
- Troponins are elevated but stable (no rise and/or fall).
- The patient did not suffer a myocardial injury post procedure.

Reference: Thygesen, K., Alpert, J. S., Jaffe, A. S., Chaitman, B. R., Bax, J. J., Morrow, D. A., White, H. D., & The Executive Group on behalf of the Joint European Society of Cardiology (ESC)/American College of Cardiology (ACC)/American Heart Association (AHA)/World Heart Federation (WHF) Task Force for the Universal Definition of Myocardial Infarction. (2018, November 13). *Fourth Universal Definition of Myocardial Infarction (2018)*. Fourth universal definition of myocardial infarction (2018). Retrieved August 22, 2022, from https://www.ahajournals.org/doi/epub/10.1161/CIR.0000000000000617

Required:
Yes

Peak post-operative troponin value

Data Abstraction Instructions:

Enter the peak value and type of troponin drawn within 30 days post procedure.

Selections:

Peak post-operative troponin

- Yes
  - troponin I
    - Yes
      - Enter lab value _____
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
    - No
  - troponin T
    - Yes
      - Enter lab value _____
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
    - No
  - troponin I HS
    - Yes
      - Enter lab value _____
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
    - No
  - troponin T HS
    - Yes
      - Enter lab value _____
      - Pick unit of lab value from list
        - ng/dL
        - ng/mL
        - ng/L
        - pg/mL
    - No
- Not Drawn

Required:
Yes

Dysrhythmia (OPP)

Data Abstraction Instructions:

Indicate if there was a new rhythm disturbance post procedure, requiring treatment with medications or cardioversion.

Selections:

- Yes
  - Enter date of first occurrence post procedure
- No

Required:
Yes

Congestive Heart Failure (CHF) (OPP)

Data Abstraction Instructions:

Indicate if it was documented that the patient had new onset or exacerbation of CHF post procedure.

Selections:

- Yes
  - Enter date of first occurrence post procedure
- No

Supporting Definitions:

Heart failure is defined as physician documentation or report of any of the following clinical symptoms of heart failure described as unusual dyspnea on light exertion, recurrent dyspnea occurring in the supine position, fluid retention, or the description of rales, jugular venous distension, pulmonary edema on physical exam, or pulmonary edema on chest x-ray. A low ejection fraction alone, without clinical evidence of heart failure, does not qualify as heart failure.

Required:
Yes

TIA/Stroke (OPP)

Data Abstraction Instructions:

Indicate if there was abrupt loss of neurological function with complete return of function within 24 hours or loss of neurological function caused by an ischemic event that is severe enough to leave a persistent deficit for greater than 24 hours.

Selections:

- Yes
  - Enter date of first occurrence post procedure
- No

Required:
Yes

Infection/Sepsis (OPP)

Data Abstraction Instructions:

Positive cultures requiring treatment with antibiotics. Do not include patients that are placed on antibiotics during a hospitalization with no positive cultures.

If yes, select all that apply.

Selections:

- Yes
  - Enter date of first occurrence post procedure (date of first positive culture)
  - Access site
  - Central Line/IV
  - Blood
  - Graft infection
  - Pulmonary
  - UTI
  - Wound site
  - Unknown
- No

Supporting Definitions:

Pneumonia may be indicated when evidenced on CXR (lobar infiltrate on CXR and/or pure growth of recognized pathogen or 4+ growth of recognized pathogen in presence of mixed growth) and treatment with antibiotics, even without positive culture.

Required:
Yes

New Requirement for Dialysis (OPP)

Data Abstraction Instructions:

Indicate if the patient had acute or worsening renal failure, post procedure, which led to dialysis during the hospitalization.

Selections:

- Yes
  - Enter date of first occurrence post procedure
- No

Required:
Yes

Transfusion (OPP)

Data Abstraction Instructions:

Indicate if the patient received any transfusion for any reason post procedure. If yes, select the type of transfusion: PRBC, Whole blood, Platelets, FFP, Other (e.g., Cryoprecipitate, Factor VIII infusion). Select all that apply.

Selections:

- Yes
  - Select type of transfusion
  - PRBC
    - Enter the number of units for PRBC's (enter # of packed red blood cells 1, 2, 3, etc.
    - Enter date of first PRBC transfusion post procedure
    - Hgb prior to Transfusion
    - Symptomatic prior to Transfusion
  - Platelets
  - FFP
  - Other
- No

Required:
Yes
Minimum:
1
Maximum:
20

Hemoglobin prior to Transfusion (OPP)

Data Abstraction Instructions:

Enter the hemoglobin value drawn prior to the first Transfusion of PRBC's post procedure. This is the value on which they made the decision to transfuse.

Selections:

- Yes
  - Enter Hgb value mg/dL
- No
- Not Documented

Required:
Yes
Suffix:
mg/dL
Soft Minimum:
2
Soft Maximum:
20

Symptomatic Prior to Transfusion (OPP)

Data Abstraction Instructions:

Select if the patient was symptomatic prior to transfusion of PRBCs. Select all that apply.

Selections:

- Yes
  - Angina
  - Hypotension
  - Tachycardia
  - EKG Changes
  - Shortness of Air
  - Bleeding
  - Cancer/Chronic Anemia
- No

Required:
Yes

Vascular Access Complications (OPP)

Data Abstraction Instructions:

Indicate vascular complications at the access site requiring transfusion, prolonged hospital stay, causing a drop in hemoglobin 3.0 gm/dl, or any access site complications requiring surgical repair. Select all that apply.

Selections:

- Yes
  - Retroperitoneal hematoma
  - Pseudo-aneurysm
  - Hematoma at access site
  - Bleeding at access site
  - AV fistula
  - Acute thrombosis
  - Surgical repair of the vascular access site
  - Other
- No

Supporting Definitions:

Retroperitoneal hematoma = bleeding into the anatomical space located behind the abdominal or peritoneal cavity.

Pseudoaneurysm = the occurrence of a disruption and dilation of the arterial wall without identification of the arterial wall layers at the site of the catheter entry demonstrated by arteriography or ultrasound.

Hematoma at access site = blood loss at the site of arterial or venous access due to perforation of a traversed artery or vein that causes at one or more of the following:

- transfusion
- prolonged hospital stay
- drop in hemoglobin > 3.0 gm/dl

Bleeding at access site = Blood loss associated with decreased Hgb (greater than or equal to 3.0 gm/dl) and/or causes an increased length of hospital stay. Without other obvious source (GI, GU, operative, or hemolysis) that is attributable to intraprocedural blood loss (e.g., during equipment changes) should be considered bleeding at the access site even if no hematoma is palpable or documented on imaging studies.

AV fistula = A connection between the access artery and the accompanying vein that is demonstrated by arteriography or ultrasound and most often characterized by a continuous bruit.

Acute thrombosis = Total obstruction of the artery by thrombus most commonly at the site of access
.
Surgical repair of the vascular access site = such as surgical closures, exploration of the arteriotomy site, balloon angioplasty or covered stent (JOMED GraftMaster) placement.

Other = a vascular access complication that is not in this list.

Required:
Yes

Compartment Syndrome (OPP)

Data Abstraction Instructions:

Indicate if the patient developed compartment syndrome at any time post procedure. When entering compartment syndrome as an outcomes post-procedure, do not enter Return to OR for the same outcome. It is implied that the patient went back to the OR to have the compartment syndrome treated.

Selections:

- Yes
  - Enter date of first occurrence post procedure
- No

Supporting Definitions:

Compartment syndrome is defined as compression of nerves and blood vessels within an enclosed space which leads to muscle and nerve damage and problems with blood flow. Include fasciotomy for prophylaxis.

Required:
Yes

Embolus (OPP)

Data Abstraction Instructions:

Indicate if the patient had an embolus post procedure. When entering an embolus as an outcomes post-procedure, do not enter Return to OR for the same outcome. It is implied that the patient went back to the OR to have the embolus treated.

Selections:

- Yes
  - Enter date of first occurrence post procedure
  - Successful
  - Unsuccessful
- No

Supporting Definitions:

An embolus (compromised of atherosclerotic debris and / or blood clot) moves through the blood vessels until it reaches a vessel that is too small to let it pass.

Required:
Yes

Thrombus (OPP)

Data Abstraction Instructions:

Indicate if a blood clot formed, post procedure, within the treated vessel, which limits distal flow. When entering thrombus as an outcomes post-procedure, do not enter Return to OR for the same outcome. It is implied that the patient went back to the OR to have the thrombus treated.

Selections:

- Yes
  - Enter date of first occurrence post procedure
- No

Supporting Definitions:

Do not include any thrombus that was present at the beginning of the procedure. If the thrombus formed within a stent of graft, select the outcome "Stent/graft thrombosis" and do not select thrombus.

Required:
Yes

Stent/Graft Thrombosis (OPP)

Data Abstraction Instructions:

Indicate if a blood clot formed within the stent/graft that limits distal blood flow. When entering stent/graft thrombosis as an outcomes post-procedure, do not enter Return to OR for the same outcome. It is implied that the patient went back to the OR to have the stent/graft thrombosis treated.

Selections:

- Yes
  - Enter date of first occurrence post procedure
  - Successful
  - Unsuccessful
- No

Required:
Yes

Amputation (OPP)

Data Abstraction Instructions:

Indicate if an amputation is performed at any time post procedure. When entering amputation as an outcomes post-procedure, do not enter Return to OR for the same outcome. It is implied that the patient went back to the OR to have the amputation performed.

If the patient had more than one amputation performed post-procedure and before discharge, enter the date and type of the first amputation performed.

Selections:

- Yes
  - Enter date of first occurrence post procedure
  - **Select type of amputation**
  - Left hip disarticulation
  - Left AKA
  - Left BKA
  - Left foot
  - Left metatarsal
  - Left digit
  - Right hip disarticulation
  - Right AKA
  - Right BKA
  - Right foot
  - Right metatarsal
  - Right digit
- No

Required:
Yes

Return to Operating Room (OPP)

Data Abstraction Instructions:

Indicate if the patient had to return to the Operating Room post procedure for an open procedure, or to fix the original surgery issues. If a patient returns to the OR for an evacuation of a hematoma post procedure and the hematoma is not in the treated vessel (for example, a hematoma at the incision site) enter Bleeding as the reason for the return to the OR. Even though there may not be any active bleeding, bleeding caused the hematoma.

Selections:

- Yes
  - Enter date of first occurrence post procedure
  - **Select reason for Return to OR**
  - Bleeding
  - Renal Ischemia
  - Endoleak
  - Infection
  - Graft Revision
  - Other
- No

Required:
Yes

Bowel Ischemia (OPP)

Data Abstraction Instructions:

Indicate if the patient had bowel ischemia post procedure. If yes, indicate if the patient had Medical Treatment, Surgical Treatment, or Both. Select all that apply.

When entering bowel ischemia as an outcomes post-procedure, do not enter Return to OR for the same outcome. It is implied that the patient went back to the OR to have the bowel ischemia treated.

Selections:

- Yes
  - Enter date of first occurrence post procedure
  - **Select treatment options for Bowel Ischemia**
  - Medical Treatment
  - Surgical Treatment
- No

Required:
Yes

Was the LOS >2 days after EVAR? (OPP)

Data Abstraction Instructions:

Indicate if the length of stay (LOS) for the Elective EVAR procedure was >2 days, and the reason the patient was in the hospital >2 days. If Yes is entered, select all reasons that apply.

LOS is calculated as the date of discharge - the date of the procedure. For example, the patient was discharged on May 16. The EVAR was performed on May 14. May 14, 15, & 16 = a LOS of 3 days.

Note: This field will not display for urgent or emergent EVAR procedures.

Selections:

- Yes
  - Hypertension
  - Lack of transportation
  - No caregiver/support at home
  - COPD
  - Urinary retention
  - Placement to another facility
  - EVAR & another surgical procedure, same DC
  - Persistent hypotension
  - FEVAR
  - Other
- No

Supporting Definitions:

Hypertension = Indicate if the patient experienced hypertension for >24 hours post procedure requiring parenteral drug treatment. Hypertension is a systolic blood pressure (SBP) > 160 mmHg and requires IV antihypertensives, ACE inhibitors, calcium channel blockers, beta-blockers, or diuretics to maintain a SBP <160 mmHg.

Lack of transportation = The hospital delayed the patient's discharge while waiting for transport to home or another facility.

No caregiver/support at home = The patient lives alone and cannot take care of themselves after surgery or does not have another person to care for them at home. If the patient's discharge is delayed because there is a dispute among the family regarding guardianship of the patient, enter No caregiver/support at home.

COPD = The patient developed an exacerbation of COPD after the procedure through discharge.

Urinary retention = The patient cannot void (urinate), requiring catheterization within 24 hours postoperatively. Or the patient cannot void (urinate) 6 hours after removing a Foley catheter inserted preoperatively.

Placement to another facility = The hospital delayed the patient's discharge while waiting for placement to another facility, such as an ECF, SNF, assisted living center, or rehabilitation institution. Please include an admission/transfer to an inpatient rehab unit.

EVAR & another surgical procedure same DC = An EVAR and another surgical procedure were performed during the same discharge (i.e., hemodialysis graft, open bypass).

Persistent hypotension = Indicate if the patient experienced persistent hypotension for >24 hours post-procedure requiring parenteral drug treatment. Hypotension is a systolic blood pressure (SBP) <90 mm Hg or the need for IV vasopressors and/or atropine to maintain a SBP >90 mmHg.

FEVAR = A fenestrated endograft was implanted during the EVAR procedure.

Other = The reason the patient was in the hospital > 2 days is not on the list.

Required:
Yes