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Revisions to Existing Definitions

The following list contains the data fields where a revision to the definition was made and the data dictionary where the definition is located.

Data Dictionary	Data Field
CAS	TIA - RT & LT Retinal
CAS	TIA - RT & LT Hemispheric
CAS	TIA - Vertebrobasilar
CAS	TIA - Unknown
CAS	Ischemic Stroke - RT & LT Retinal
CAS	Ischemic Stroke - RT & LT Hemispheric
CAS	Ischemic Stroke - Vertebrobasilar
CAS	Ischemic Stroke - Unknown
CAS	All Intracranial Hemorrhage
CAS	Carotid Angiography Performed
CAS	Anesthesia
CAS Follow-up	Neuro Deficit Occurred Since DC
CAS Follow-up	Territory of Neurological Deficit
CAS Follow-up	Smoking
CEA	TIA - RT & LT Retinal
CEA	TIA - RT & LT Hemispheric
CEA	TIA - Vertebrobasilar
CEA	TIA - Unknown
CEA	Ischemic Stroke - RT & LT Retinal
CEA	Ischemic Stroke - RT & LT Hemispheric
CEA	Ischemic Stroke - Vertebrobasilar
CEA	Ischemic Stroke - Unknown
CEA	All Intracranial Hemorrhage
CEA	Carotid Angiography Performed
CEA	Anesthesia
CEA	New Stroke - All fields
CEA	New TIA - All fields
CEA Follow-up	Neuro Deficit Occurred Since DC
CEA Follow-up	Territory of Neurological Deficit
CEA Follow-up	Smoking
Discharge	HTN
Discharge	Previous MI
VS	Vessel Perforation
VS	Mental Status (for ruptured AAA)
VS	Antibiotics Pre Procedure
VS Follow-up	Smoking

Discharge Form

Discharge Status

Homeless will be added as an option to Discharge Status.

Data Abstraction Instructions:

Enter the location to which the patient was discharged.

Selections:

- Home
- Rehabilitation
- Other acute care hospital
- Nursing home/Extended care
- Hospice/Comfort care
- Left against medical advice
- Death
- Assisted Living
- Homeless
- Other

Home = The patient was discharged to the place they lived before being admitted to the hospital. If the patient was admitted from a nursing home or prison and released back to the nursing home or prison, enter Home for Discharge Status.

Rehabilitation = The patient was discharged to an inpatient rehab floor or an external rehab facility.

Other acute care hospital = The patient is discharged to a facility where they need immediate but short-term care.

Nursing home = The patient was discharged to a nursing home for long-term care or because they needed nursing care beyond rehabilitation. If the patient was discharged to a nursing home for physical rehabilitation, enter Rehabilitation for Discharge Status.

Left against medical advice = The patient was discharged or left (eloped) the hospital against medical advice.

Death = The patient died at any time during the hospital encounter.

Assisted Living = The patient was discharged to an assisted living facility, or the patient was discharged to home with home health care. Home care and home health care are not the same. Home care provides the patient with non-clinical help. Home health care provides professional medical assistance.

Homeless = The patient has no physical home or lives in a homeless shelter.

Other = The patient was discharged to a facility not on the list.

Previous Myocardial Infarction

We have revised this definition. The new language is highlighted in yellow.

Revised definition: Indicate if the patient has had at least one documented previous myocardial infarction. This includes any occurrence between birth and the current procedure.

Enter Previous 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:

- 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

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

Total Cholesterol

This field will be archived for carotid and VS procedures.

Pre-operative opioid use

We will add this field to CAS and TCAR procedures.

Discharged with opioid

We will add this field to CAS and TCAR procedures.

Opioid Education

The current Opioid Education data definition is too restrictive. We revised the definition. The new language is highlighted in yellow.

Revised definition: Indicate if the patient received pain management instructions and/or education on the correct use of opioid medication for this procedure. This education may have been provided pre- or post-procedure and may include alternative pain management modalities, proper use of opioid medications, and expectations surrounding pain level.

An actual note referencing the education needs to be in the patient record. This note can be written by a physician, advanced practice provider, or nurse. Pre-populated discharge template instructions do not qualify. If the provider used the "Opioid Start Talking Form," this form must be scanned into the EMR with the patient's signature, and the provider does not need to write a note.

Please click the following link for more information about Michigan Opioid Laws regarding Opioid Education and Opioid Start Talking form: https://www.michigan.gov/opioids/0,9238,7-377-88141_88294---,00.html."

Indications

Facilitation of Procedure

This field will be archived from Open Bypass and Open Thrombectomy procedures.

Procedure Details

Minimal Vein Graft Diameter

The Minimal Vein Graft Diameter field will be removed from Open Bypass>Procedure Details to Imaging Studies (w/in past 6 months)>Vein mapping for VS procedures.

Data Abstraction Instructions:

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.

Selections:
Vein Mapping:

- Yes
  - Value for Minimal Vein Graft Diameter: mm → required
  - Not documented
- No

Fluoroscopic Time

Fluoroscopic Time is a new field for EVAR procedures. This field will be located under Procedure Details after Conversion to Open.

Data Abstraction Instructions:

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

Selections:

- Enter value (mins)
- Not documented

Air Kerma

Air Kerma is a new field for EVAR procedures. This field will be located under Procedure Details after Fluoroscopic Time.

Data Abstraction Instructions:

Enter the Air kerma for the EVAR procedure. 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

Selections:

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

Required: Yes

Minimum value:
0
Maximum value:
100

Kerma Area Product (Dose Area Product)

Kerma Area Product (Dose Area Product) is a new field for EVAR procedures. This field will be located under Procedure Details after Air Kerma.

Data Abstraction Instructions:

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

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

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

Required:
Yes
Minimum:
0
Maximum:
10000

Outcomes During Procedure

Myocardial Infarction (MI)

We collect MI for VS procedures under Outcomes During Procedure. The definition will be revised. The new language is highlighted in yellow.

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

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
- An Echo/MRI/Stress test that is positive for ischemia
- Thrombus seen on angiogram or autopsy
- 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

Outcomes Post Procedure

Myocardial Injury Post Procedure

We revised the definition of Myocardial Injury post procedure for VS and carotid procedures per Dr. Davy Hamilton's presentation on our YouTube page https://youtu.be/VxInwYUXOrM.

Definition: Indicate if the patient suffered a myocardial injury post procedure, including an ~~troponin leak~~ Acute Myocardial Injury, ~~demand ischemia~~ Type 2 Myocardial Infarction, ~~NSTEMI~~ 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.

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

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

Was the LOS >2 Days after EVAR?

More options will be added to this data field. These options were previously entered as "Other."

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.

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 = Indicate if 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.

Was the LOS >2 Days after CEA?

More options will be added to this data field. These options were previously entered as "Other."

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

Selections:

- Yes
  - ☐ Hypertension
  - ☐ Lack of transportation
  - ☐ No caregiver/support at home
  - ☐ COPD
  - ☐ Urinary retention
  - ☐ Placement to another facility
  - ☐ Worsening of stroke after CEA
  - ☐ CEA & another surgical procedure same DC
  - ☐ 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.

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.

Worsening of stroke after CEA = The patient had a stroke before the CEA and the patient's stroke symptoms are worse after the CEA.

CEA & another surgical procedure same DC = A CEA and another surgical procedure were performed during the same discharge (i.e., hemodialysis graft, CABG that was performed separately from the CEA).

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

30-Day and 1-Year Follow-up Forms

Current Living Status

Rehabilitation, Other acute care hospital, Hospice / Comfort care, and Homeless will be added to the 30-Day and 1-year Follow-up Forms for VS and carotid procedures.

Data Abstraction Instructions:
Indicate the living status of the patient at the time of follow up.

Selections:

- Home
- Rehabilitation
- Other acute care hospital
- Nursing Home/Extended Care
- Hospice / Comfort care
- Assisted Living
- Homeless
- In Hospital
- Dead
- Not documented

Home = The patient lives at the place during the follow-up interval they lived before being admitted to the hospital. If the patient is in prison at the time of follow-up, enter Home.

Rehabilitation = The patient is on an inpatient rehab floor or in an external rehab facility. If the patient is in a nursing home for physical rehabilitation, enter Rehabilitation.

Other acute care hospital = The patient is in a facility where they need immediate but short-term care.

Nursing home / Extended Care = The patient is in a nursing home for long-term care or because they need nursing care beyond rehabilitation. If the patient is in a nursing home for physical rehabilitation, enter Rehabilitation.

Hospice / Comfort care = The patient is admitted to a Hospice center or is at home and is under the care of a Hospice center. Or the patient is in a facility where comfort care orders have been written.

Assisted Living = The patient is in an assisted living facility, or the patient was discharged to home with home health care. Home care and home health care are not the same. Home care provides the patient with non-clinical help. Home health care provides professional medical assistance.

Homeless = The patient has no physical home or lives in a homeless shelter.

In Hospital = The patient is in the hospital at the time of follow-up.

Dead = The patient died any time after discharge or during the follow-up interval.

Calcium Channel Blocker and Thiazides

These medications are new fields and will be added to the 30-Day and 1-year Follow-up Forms for VS and carotid follow-ups and will be located under ACE Inhibitor.

Data Abstraction Instructions:

Indicate if the patient is taking a Calcium Channel Blocker at the time of the follow-up and if there is a contraindication to Calcium Channel Blockers. Current medications may be obtained from a phone call if the patient is asked to gather their medication bottles and read them.

Selections:

- Yes
- No
    - Contraindicated for Calcium Channel Blockers:
        - Yes
        - No
- Not documented

We will have the same definition and build for Thiazides.

EVAR 1-Year Renal Failure Replacement Therapy

Data Abstraction Instructions:

Indicate if the patient had hemodialysis, CAPD, or CRRT during the 1-year follow-up timeframe for EVAR procedures only. Enter the date the renal failure replacement therapy was initiated. If no date is documented enter not documented.

EVAR 1-Year Renal Failure Replacement Therapy can be obtained through the medical record or a phone call to the patient.

Procedure Type:

- ☐ **EVAR 1-Year Renal Failure Replacement Therapy**
  - Enter date EVAR 1-Year Renal Failure Replacement Therapy was initiated
  - Enter Not documented if the date of the Renal Failure Replacement Therapy is not documented.

Supporting Definitions: This information should be gathered from a patient's medical record and not from interviewing the patient.

EVAR 1-Year Creatinine Value

This field will be a new field for VS 1-year follow-ups for EVAR procedures only. It will be located after EVAR 1-Year Renal Failure Replacement Therapy.

Data Abstraction Instructions:

Enter the Creatinine value and the date of the Creatinine value on the 1-year follow-up for EVAR procedures only.

Procedure Type

- ☐ **EVAR 1-Year Creatinine**
  - Enter EVAR 1-Year Creatinine Value (mg/dl)
  - Date of EVAR 1-Year Creatinine Value

CAS Opioid Follow-up Fields

The following data fields and their child fields will be added to the CAS 30-day follow-up.

- Patient still taking opioid
- Refills requested
- Refills given

MI

We collect MI for carotid and VS procedures at the 30-Day and 1-Year follow-up. The definition will be revised. The new language is highlighted in yellow.

Revised definition: Indicate if the patient was readmitted to the hospital for a myocardial infarction post procedure. This information should be gathered from a patient's medical record, not from interviewing the patient.

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:

- 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

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