Guidelines for Validation of Selected AHRQ Quality Indicators

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PSI 10: Post-operative Physiologic and Metabolic Derangement

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of
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Getting started

Prior to starting data abstraction, familiarize yourself with the medical record, pertinent health information policies and procedures specific for your medical center, as well as the specific Patient Safety Indicator (PSI) abstraction guideline and instrument.

Review the “Getting Started” document (AHRQ_Pilot_Getting_Started.doc).

The abstraction Instrument is provided as Appendix A of this document.

General Instructions for Completing the AHRQ Study Record

Please complete all data fields: All data fields must be completed to enable submission of a Patient Record to the AHRQ Patient Safety Indicator (PSI) Database. If you do not have the information for a given field, check the “Not Documented” box. Except as noted below, avoid leaving any questions blank. Most questions that relate to specific findings or data elements default to “no” if left unchecked.

We assume that if a finding is not documented in the records that it does not occur. Questions that relate to specific times, physical findings or laboratory values generally can be answered with”9”, “99”, “999”, “99:99” etc., if the necessary information is missing or un-interpretable. If you believe that a question should be answered in this manner, but the computer entry system does not allow it, contact your supervisor and/or AHRQ.

Use leading “zeros” to complete a number string **EXCEPT** for DRG and/or procedure codes. For example, if given a double digit entry and the number of events to be entered is less than 10, precede the entry with a zero (e.g., 07 for 7). ENTER all DRG and procedure codes as written with careful consideration of the decimal point. Do not right or left margin adjust and do not add any additional digits including ‘zeros”. For example, 38.9 should be entered as [_ 3 8.9 _].

Date/time: All dates are recorded in the [MM/DD/YYYY] format. All times are recorded using a 24-hour clock (or military time) [_ _ : _ _]. To convert clock time to military time, with the exception of midnight and noon, add 12 to any time after noon. For example 1:15 pm should be recorded as 13:15. For estimating time, use time anchors such as important events, television shows or other references to narrow the time window.

Information sources: All information entered into the database must be gleaned from the medical record. Many hospitals are in the process of converting from paper to an electronic medical record (EMR or eMR). It is acceptable to use a combination of sources, as long as the record retrieved was

an approved component of the record system at the time care was rendered. It is permissible to obtain missing reports. For example, if the patient had a MRI but the final MRI report is missing. It is acceptable to access the report on-line or to obtain a copy from the radiology department. Electronic generated reports used for diagnoses should contain an electronic signature.

Conflicting information: For conflicting information in the record, document the finding of the most senior member of the patient care team. The hierarchy from most senior to junior is as follows:

- ❑ Primary, attending or consulting physician
- ❑ Chief or senior resident (e.g., generally 3rd or 4th year or higher depending on specialty)
- ❑ Junior resident (e.g. 2nd year or PG2)
- ❑ Intern (e.g., 1st year or PG1)
- ❑ Medical student (with MD signature)
- ❑ Physician extender [physician assistant (PA), Nurse Practitioner (NP), mid-wife, or advanced practice RN [clinical nurse specialists (CNS), certified registered nurse anesthetists (CRNA) or other]
- ❑ PA student or NP student (with physician signature)
- ❑ RN (registered nurse with or without further certifications regardless of level of entry into practice such as ASN, BSN, MSN, etc).
- ❑ Other licensed and applied healthcare professionals such as a licensed practical nurse (LPN), vocational nurse (LVN) nurse, physical therapist (PT), dietician, etc.
- ❑ Unlicensed assistive personnel (e.g., physical therapy aid, nutritional aid, laboratory assistant, nursing assistant or nursing aid).

Notes completed by students should not be used for review unless cosigned by a physician or other appropriate level staff. Medical student notes are often labeled MS3, MSIII, MS4, MSIV, or AI (acting intern). Residents notes may be labeled as R4, R3, R2, R1 or RPN" (for resident progress note with the corresponding year of training), PG4, PG3 etc., or PGY4, PGY3 respectively (for postgraduate year); or HO3, HO4, etc. (for house officer followed by the training year). The more senior resident in a leadership role may use the title "chief resident".

Several types of inconsistencies may occur in the medical record. Except as described in subsequent sections, inconsistencies should be resolved as follows:

a. If two notes are directly contradictory (e.g., one physician describes the patient's medical problem as stable but another specially states unstable), record the findings of the more senior person. If the contradictory notes are written by individuals at the same level (e.g., two attending physicians), record the findings of the person with more specialized

knowledge and expertise in the specific area (e.g. a surgeon for surgical findings and an internist or cardiologist for cardiopulmonary findings).

b. If two notes are inconsistent but not directly contradictory (e.g., one physician reports" an accidental laceration of the bladder", but another "does not report that any accidental laceration occurred", record the findings of the more senior person. If the inconsistent notes are written by individuals at the same level (e.g., two attending) look for other evidence in the chart (e.g. nursing, laboratory or radiology notes) that corroborates the more specific or serious finding. If such evidence cannot be found, record the findings of the person with more specialized knowledge and expertise.

c. If two notes are inconsistent due to omission of relevant information (e.g. one physician states "deep vein thrombosis " but another does not mention deep vein thrombosis), the note that provides the most specific information relative to that data element should always be used (regardless of seniority).

Data verification: Each page of the medical record should contain at least two unique patient identifiers (e.g., medical record number, patient name, date of birth, etc.). While abstracting data, please confirm that each page of the medical record is for the index patient and associated hospital admission. It is not uncommon for portions of the record to be misfiled.

Case Ascertainment

Patients included in the AHRQ PI validation database: This is a retrospective chart review based on a computer randomized sample (without replacement) generated from administrative data. This sample includes patients discharged within the last 12-24 months. Data collection should occur between December 2006 and March 2007. Each hospital participating in the AHRQ PSI Validation Project will receive a computer generated list of patients for data abstraction. This list is subsequently referred to as the sampling list. The sampling list will contain an AHRQ unique patient identification code number as well as the medical record or patient control number to be used for chart identification.

It is extremely important that you include only patients listed on your sampling list. It is not okay to substitute a patient with a like diagnosis. Patients selected for this validation project were sampled based on the following inclusion and exclusion criteria.

Inclusion criteria

Selected patients should have ALL of the following criteria (denominator):

- An elective surgical discharge DRG code*
- An ICD-9-CM code for an operating room procedure (meaning that the procedure was performed in the operating room)
- Be 18 years of age or older
- A discharge ICD-9-CM code for physiologic and metabolic derangement in any secondary diagnosis field **OR** have acute renal failure (a subgroup of physiologic and metabolic derangement) accompanied by a procedure code for dialysis (39.95, 54.98).

ICD-9-CM physiologic and metabolic derangement diagnosis codes include the following:

- Diabetes (type I or II) with ketoacidosis (codes 25010 through 25013)
- Acute renal failure (codes 5845 through 5849, 586, and 9975)
- Diabetes (type I or II) with hyperosmolarity (codes 25020 through 25023)
- Diabetes (type I or II) with coma (codes 25030 through 25033)

*A list of all medical and surgical codes are available on the AHRQ Quality Web Site: http://www.qualityindicators.ahrq.gov.

Exclusion criteria

Patients in the sample should have none of the following exclusions:

- A preexisting condition (principal diagnosis or secondary diagnosis present on admission, if known) of physiologic and metabolic derangements OR chronic renal failure
- Acute renal failure where a procedure for dialysis occurs before or on the same day as the first operating room procedure.
- Both a diagnosis code of ketoacidosis, hyperosmolarity, or other coma (subgroups of physiologic and metabolic derangements coding) AND a principal diagnosis of diabetes.
- Both a secondary diagnosis code for acute renal failure(subgroup of physiologic and metabolic derangements coding) and a principal diagnosis of acute myocardial infarction, cardiac arrhythmia, cardiac arrest, shock, hemorrhage, or gastrointestinal hemorrhage
- A major diagnostic category (MDC) code related to pregnancy, childbirth and the puerperium (MCD 14).

For additional information on inclusion and exclusion criteria, refer to the AHRQ technical guidelines, March 2007.

COMPLETING THE PATIENT RECORD

Section 1: Abstractor details

QUESTION 1.1: Date abstraction completed

Abstraction date: Enter the date of the chart abstraction using the MM/DD/YYYY format.

QUESTION 1.2: Abstractor identification number

Abstractor identification: Each abstractor will have a unique log-in identifier linked to a unique abstractor identification number. It is essential that each abstractor use their assigned identifier and password when signing into the AHRQ PSI program and in completing data abstraction. For many hospitals, this will be the abstractor's initials.

Section 2: Record identification/validation

QUESTION 2.1: AHRQ Study identification number

AHRQ study identification number: Enter the AHRQ study identification code of the record you are abstracting. This number can be found on the computer generated sampling list. It is important that you have the correct chart before proceeding.

QUESTION 2.2: Medical record number/Patient control number

Medical record number (MRN, MR# or patient control number): The medical record/patient control number will be used for audit purposes and patient verification only. If the medical record/patient control number does not match the AHRQ study identification code, do not continue. If the patient has been admitted under more than one medical record number, ensure that the primary and final medical record numbers match the sampling list. If there are any questions regarding the validity of the medical record number(s), notify your supervisor and/or appropriate department(s) to establish the correct number for the patient. If there is a conflict in the medical record number and AHRQ study number that cannot be easily rectified or resolved, notify the coordinating center.

Preferred data source: Admission record.

QUESTION 2.3: What is the patient's date of birth?

Date of birth (DOB): Use the DOB on the admission or face sheet. Data used for analysis will contain the calculated age. Use a leading zero when entering single digit months (e.g., 03 for March).

Preferred data source: Admitting form.

QUESTION 2.4: What is the patient's gender?

Gender (sex): Enter if the patient is a male or female.

Preferred data source: Use the admission or face sheet followed by the physician's admission history and physical followed by the nurse's admission assessment.

Common Problems/ Questions: *Often there is conflicting information concerning demographic information. If the data element (e.g., gender, birth date, etc.) is recorded differently on the admission sheet and on other parts of the medical record, check several sources to verify the correct response. If an incorrect demographic is entered on admission, it will appear on all system generated reports until changed (i.e., laboratory test, diagnostic procedures, etc). Use reports that are not automatically generated to verify information (e.g. history and physical).*

QUESTION 2.5: What was the date of hospital admission?

Admission date: Verify the month, day and year the patient was admitted to the hospital. If there are conflicting times in the medical record, use the time on the face sheet followed by the admitting assessment form. If there are conflicts greater than 24-hour between the sampling list admit date and chart date, notify the coordinating center.

Preferred data sources: Face sheet, Nursing Admission Assessment Record, History and Physical (H&P), pre-operative assessment form if admitted directly to the pre-op area.

QUESTION 2.6: What was the discharge date?

Discharge date: Enter the month, day and year the patient was discharged from the acute care hospital or index facility. This includes transfer to a non-acute care area associated within some hospital systems (e.g., a sub-acute care unit, long-term care, or rehabilitation area). For patients that expired during hospitalization, use the date the patient was pronounced.

Preferred data sources: Face sheet, Nursing Discharge Record, Ambulance transfer record, discharge summary. For patients that expired, use the death certificate or death note followed by the nursing record.

Section 3: Record identification/validation

QUESTION 3.1: Did this patient have a surgical procedure performed in the operating room during this hospitalization?

Surgical procedure: All patients included in this indicator should have had a procedure that was performed in the operating as indicated by a corresponding operative DRG and ICD-9-CM procedure code. For patients who had a surgical procedure performed outside of the operating room, regardless of the complexity of the procedure, answer NO and provide a brief explanation of the procedure and location performed in the TEXT BOX and then END the form. For example, an aneurysm coiling of the middle cerebral artery for a subarachnoid hemorrhage (SAH) performed in the interventional neuroradiology suite. These procedures can lengthy and require general anesthesia but should still be answered with a "NO" response.

Preferred data sources: Coding sheet, operating room records, surgical dictation and notes, and physician records.

QUESTION 3.2: Was the surgery performed emergently or as a non-scheduled procedure?

Urgency: To continue to be included in this indicator, the procedure from 3.1 should have been performed as an elective or scheduled case. Answer NO if the operative procedure was unplanned or emergent and then provide brief explanation of the circumstances surrounding the surgical event and then END the form.

Synonyms and inclusions for emergent or non-elective procedure:

- ☐ Emergency
- ☐ Urgent
- ☐ Unplanned

Synonyms and inclusions for non-emergent or an elective procedure:

- ☐ Prescheduled prior to admission
- ☐ Planned to a future date
- ☐ Non-emergent
- ☐ Planned

Preferred data sources: Coding sheet, operating room records, surgical dictation and notes, and physician records.

QUESTION 3.3: Was the admission related to pregnancy, childbirth and or to the puerperium [Major diagnostic code (MDC) 14]?

MDC 14: For YES answers, give a brief description in the TEXT BOX provided on why this patient may have been included in the sample and then END the FORM.

Preferred data sources: History and physical, face sheet/coding sheet, progress notes, operating room records, surgical notes and consultative records.

QUESTION 3.4: During this admission, was the patient diagnosed prior to the first elective surgery of having any of the following medical conditions? Check all that apply.

Prior conditions: Patients with any of the listed conditions should not be included in the abstraction. If any conditions are checked, give a brief description in the TEXT BOX and then END the form. See the *ARHQ Quality Indicator Patient Safety Indicator Technical Specifications Manual* for additional coding guidelines as needed.

Chronic renal failure (CRF) synonyms and inclusions:

- ☐ Malignant hypertensive chronic kidney disease, malignant, with chronic kidney disease stage V or end stage renal disease (40301)
- ☐ Hypertensive chronic kidney disease, benign, with chronic kidney disease stage I through stage IV, or unspecified (40311)
- ☐ Hypertensive chronic kidney disease, unspecified, with chronic kidney disease stage V or end stage renal disease (40391)
- ☐ Hypertensive heart and chronic kidney disease, malignant, without heart failure and with chronic kidney disease stage V or end stage renal disease (40402)
- ☐ Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage V or end stage renal disease (40403)
- ☐ Hypertensive heart and chronic kidney disease, benign, without heart failure and with chronic kidney disease stage V or end stage renal disease (40412)
- ☐ Hypertensive heart and chronic kidney disease, malignant, with heart failure and with chronic kidney disease stage V or end stage renal disease (40413)
- ☐ Hypertensive heart and chronic kidney disease, unspecified, without heart failure and with chronic kidney disease stage V or end stage renal disease (40492)
- ☐ Hypertensive heart and chronic kidney disease, unspecified, with heart failure and with chronic kidney disease stage V or end stage renal disease (40493)
- ☐ Chronic renal failure (585)
- ☐ Chronic kidney disease stage V (5855)
- ☐ End stage renal disease (5856)

Acute myocardial infarction (AMI) synonyms and inclusions (ICD-9-CM codes include initial episodes of care and unspecified episodes of care 41000-1; 41010-11; 41020-21; 41030-31; 41040-41; 41050-51; 41060-61; 41070-71; 41080-81; 41090-91): Include all types of AMI.

- ☐ Anterior or anterior wall
- ☐ Anterolateral or anterolateral wall
- ☐ Inferolateral or inferolateral wall
- ☐ Inferoposterior or inferoposterior wall
- ☐ Inferior or inferior wall
- ☐ Lateral or lateral wall
- ☐ True posterior, posterior, or posterior wall infarction
- ☐ Posterior inferior or posterior inferior infarction
- ☐ Subendocardial or subendocardial infarction
- ☐ Non-Q wave
- ☐ Q-wave
- ☐ Heart attack

Cardiac dysrhythmias synonyms and inclusions (ICD-9-CM codes 4260, 4270-2, 42731-2, 42741-2, 4279 or DRG 138-9):

- ☐ Complete atrioventricular block, complete AV block, or 3rd degree AV block
- ☐ Paroxysmal supraventricular tachycardia or SVT
- ☐ Paroxysmal ventricular tachycardia V. Tach
- ☐ Paroxysmal tachycardia, unspecified
- ☐ Atrial fibrillation or A. fib.
- ☐ Atrial flutter or A. flutter
- ☐ Ventricular fibrillation or V. fib.
- ☐ Ventricular flutter
- ☐ Cardiac dysrhythmia or arrhythmia

Shock synonyms and inclusions (63450-2; 63550-2, 63750-2; 6385, 6395, 66910-14; 7855, 78550-2; 78559; 9950-9980, 9994):

- ☐ Any type of shock related to spontaneous abortion (unspecified, incomplete or complete) either legal or illegal, shock associated with ectopic and molar pregnancies, shock associated with antepartum, labor and delivery, postpartum complication,
- ☐ Shock without mention of trauma
- ☐ Shock unspecified
- ☐ Cardiogenic shock
- ☐ Septic shock
- ☐ Anaphylactic shock
- ☐ Postoperative shock (from a previous event)

Hemorrhage synonyms and inclusions (ICD-9-CM codes 2851, 4590, 9582, and 99811):

- ☐ Gastrointestinal hemorrhage or varicies
- ☐ Esophageal varicies (with bleeding,
- ☐ Gastroesophageal laceration-hemorrhage syndrome
- ☐ Gastric ulcer with acute hemorrhage with or without perforation and/or obstruction,
- ☐ Duodenal ulcer with acute hemorrhage with or without perforation and/or obstruction,
- ☐ Peptic ulcer –acute or chronic with hemorrhage
- ☐ Bleeding gastrojejunal ulcer
- ☐ Gastritis and duodenitis with hemorrhage
- ☐ Alcoholic gastritis with hemorrhage
- ☐ Other angiodysplasia of stomach and duodenum with hemorrhage
- ☐ Dieulafoy lesion (hemorrhage) of intestine
- ☐ Diverticulosis of small intestine
- ☐ Diverticulosis of colon
- ☐ Gastrointestinal hemorrhage , hematemesis, blood in stool
- ☐ Unspecified GI tract hemorrhage
- ☐ Acute posthemorrhagic anemia (2851)
- ☐ Other disorders of circulatory system, hemorrhage, unspecified (4590)
- ☐ Certain early complications of trauma, secondary and recurrent hemorrhage(9582)
- ☐ Hemorrhage complicating a procedure (999811)

Diabetes with either ketoacidosis, hyperosmolarity or other coma (diabetes diagnosis codes including 4th and 5th digits) synonyms and inclusions:

- ☐ Diabetes mellitus without mention of complication
- ☐ Diabetes with ketoacidosis
- ☐ Diabetes with hyperosmolarity
- ☐ Diabetes with other coma
- ☐ Diabetes with renal manifestations
- ☐ Diabetes with ophthalmic manifestation
- ☐ Diabetes with neurological manifestation
- ☐ Diabetes with peripheral circulatory disorders
- ☐ Diabetes with other specified manifestations
- ☐ Diabetes with other unspecified complications

Cardiac arrest synonyms and inclusions:

- ☐ Code blue

- ☐ Cardiopulmonary arrest
- ☐ Sudden cardiac arrest
- ☐ Cardiopulmonary resuscitation (CPR)
- ☐ Advanced cardiopulmonary resuscitation or advanced cardiac life support (ACLS)

Preferred data sources: History and physical, face sheet/coding sheet, progress notes, operating room records, surgical notes and consultative records.

Section 4: Diabetes

QUESTION 4.1: Did the patient have diabetes mellitus (DM)?

Diabetes: To continue with this section, all patients should have a diagnosis of diabetes, typically described as either type I(1) or type II (2). Include both behavior (e.g., diet) and medication controlled cases. For patients that cannot be clearly classified as type I or type II diabetes, select the type II option. Include the patient if the diabetes was diagnosed during this hospitalization.

Do not include diagnoses such as “syndrome X”, metabolic syndrome, hyperglycemia, or insulin resistance unless the diagnosis for diabetes is specifically stated. Diabetes insipidus (DI) is a different disease process and should not be confused with diabetes mellitus.

Diabetes type I synonyms and inclusions:

- ☐ Child onset diabetes
- ☐ Insulin dependent
- ☐ Resulting from beta-cell destruction
- ☐ Absolute insulin deficiency
- ☐ Type 1A diabetes mellitus
- ☐ Immune mediated diabetes mellitus
- ☐ Diabetes associated with autoimmune polyendocrine syndrome type 1

Diabetes type II synonyms and inclusions:

- ☐ Adult onset (AODM)
- ☐ Non-insulin dependent (although may be on insulin) (NIDM)
- ☐ Insulin resistance diabetes
- ☐ Progressive insulin secretory defect
- ☐ Also include specific diabetes due to other causes such as:
  - o Genetic defects in beta-cell function
  - o Genetic defects in insulin action
  - o Diseases of the exocrine pancreas (such as cystic fibrosis)

- o Drug and chemical induced (such as in the treatment of AIDS or after organ transplantation).

Exclusion: Diabetes as a complication of childbirth is an exclusion criteria and these patients should not be included in the abstraction. The exception being the person first diagnosed with gestational diabetes mellitus that did not resolve after the puerperium.

Preferred data sources: History and physical, discharge summary, progress notes, and consultative records.

QUESTION 4.2: Which of the following post-operative events did the patient experience during **THIS** hospitalization? Select all that apply. If YES, note the time and date of the first event.

Diabetic complications: For each event selected, note the time and date of the first specified event. In the rare event that a patient had more than one occurrence, state the number of **additional** events. Do not include the first event in counting the additional events. For diabetics with ketoacidosis and/or hyperosmolarity, use the time the event was first diagnosed by a physician. For diabetes with coma, use the time it was first noted by any licensed healthcare provider.

Diabetes with ketoacidosis synonyms and inclusions:

- ☐ Diabetic ketoacidosis (DKA)

Diabetes with hyperosmolarity synonyms and inclusions:

- ☐ Nonketotic hyperosmolar diabetic coma
- ☐ Hyperosmolar hyperglycemic nonketotic syndrome (HHNS)
- ☐ Hyperosmolar coma
- ☐ Hyperosmolar hyperglycemic state
- ☐ Hyperosmolar nonketotic state

Diabetes with other coma synonyms and inclusions:

- ☐ Hypoglycemia
- ☐ Hypoglycemia coma

Preferred data sources: Physician progress notes, surgical notes, consultative records, diabetic records, discharge record/notes.

QUESTION 4.3: Did the patient have any of the following? Select all that apply.

Risk factors: Only select chronic steroid use if the patient was taking steroids at the time of admission. Include inhaled, oral, and anabolic steroidal medication (prescribed or otherwise). If YES to any selection, provide a brief description in the text box.

Gastric surgery synonyms and inclusions:

- ☐ Gastrectomy
- ☐ Gastrojejunostomy
- ☐ Pyloroplasty
- ☐ Gastric bypass
- ☐ Vagotomy

Preferred data sources: History and physical, progress notes, nursing records, and old records.

QUESTION 4.4: State the patient's normal (routine) medications prehospitalization: Select all that apply. For combination medications, select the individual components.

Oral medications synonyms and inclusions: This list should represent the patient's normal medication regimen (without preoperative adjustments for surgery). Enter the dose taken in a normal 24-hour period. For combination medications, such as Avandaryl (either 4/1, 4/2 or 4/4), select and enter the amount consumed in 24-hour period of the individual components. For Avandaryl 4/2 given daily this would be Avandia 4mg and Glimiperide 2mg.

Preferred data source: Admission history and physical, nursing admission record, medication reconciliation record.

QUESTION 4.5: Select all diabetic medications that the patient received within 24-hours of event diagnosis and state the total dose given during the 24-hour period. For combination medications, select the individual components as in question 4.4.

Event medication: Enter all diabetic related medication that the patient received in the 24-hour period prior to the recognition of the diabetic related event. For diabetic ketoacidosis and hyperosmolarity, use the time of physician diagnosis as the time of onset. For hypoglycemia, use the time of the first notation by a licensed healthcare worker.

Preferred data source: Medication administration record, diabetic flowsheet, medication portion of any special flowsheet, physician medication orders.

QUESTION 4.6: Did the patient receive a beta blocker (beta-adrenergic blocking agents, beta- adrenergic antagonists, or beta antagonists) within 24-hours of the event?

Beta-blocker synonyms and inclusions:

Non-selective agents
- o Alprenolol
- o Carteolol
- o Levobunolol
- o Mepindolol
- o Metipranolol
- o Nadolol
- o Oxprenolol
- o Penbutolol
- o Pindolol
- o Propranolol
- o Sotalol
- o Timolol

β_1-Selective agents
- o Acebutolol
- o Atenolol
- o Betaxolol
- o Bisoprolol
- o Esmolol
- o Metoprolol
- o Nebivolol

Mixed α_1/β-adrenergic antagonists
- o Carvedilol
- o Celiprolol
- o Labetalol

β_2-Selective agents
- o Butaxamine

Preferred data source: Medication administration record, diabetic flowsheet, medication portion of any special flowsheet, physician medication orders.

QUESTION 4.7: Did the patient suffer or have any other following known conditions 24-hours prior to the event?

Events: If infection is selected, select the type of infection. For other infection or inflammatory response selections, provide a brief description in the TEXT box.

Acute myocardial infarction (AMI) synonyms and inclusions:

- ☐ Myocardial infarction (MI)
- ☐ Anterior or anterior wall MI
- ☐ Anterolateral or anterolateral wall MI
- ☐ Inferolateral, or inferolateral wall MI
- ☐ Inferoposterior, inferoposterior infarction or MI
- ☐ Inferior, inferior wall infarction or MI
- ☐ Lateral, lateral infarction or lateral wall MI
- ☐ True posterior, posterior, posterior wall infarction or MI
- ☐ Posterior inferior or posterior inferior infarction or MI
- ☐ Subendocardial, subendocardial infarction or subendocardial MI
- ☐ Non-Q wave
- ☐ Q-wave
- ☐ Heart attack

Ileus or intestinal obstruction synonyms and inclusions:

- ☐ Bowel obstruction
- ☐ Ogilvie syndrome
- ☐ Paralytic ileus
- ☐ Intestinal volvulus
- ☐ Bowel obstruction
- ☐ Intestinal pseudo-obstruction

Sepsis synonyms and inclusions:

- ☐ Systemic inflammatory response syndrome (SIRS)
- ☐ SIRS shock
- ☐ Severe sepsis
- ☐ Septic shock
- ☐ Multiple organ dysfunction syndrome (MODS)
- ☐ Blood stream infection
- ☐ Any primary infection with sepsis (e.g., pneumonia with sepsis)

- ☐ Toxic shock syndrome

Infection synonyms and inclusion (non-inclusive list):

- ☐ Bronchiolitis, pneumonia or other respiratory infection
- ☐ Carbuncles
- ☐ Pyoderma
- ☐ Localized infection of any tissue or organ
- ☐ Infected decubitus ulcer
- ☐ Osteomyelitis
- ☐ Chronic wound or gangrene
- ☐ Wound with necrosis

- ☐ Pyogen, infected, or septic arthritis
- ☐ Infected insect or animal bites
- ☐ Cellulitis
- ☐ Kidney and urinary tract infections
- ☐ Any bacterial or viral infections
- ☐ Encephalitis, meningitis or other infection of the nervous systems
- ☐ Fungal or parasitic infection

Other inflammatory response synonyms and inclusion (non-inclusive list):

- ☐ Allergy or hypersensitivity
- ☐ Anaphylaxis
- ☐ Blood transfusion reaction
- ☐ Serum sickness
- ☐ Transplant rejection
- ☐ Graft versus host disease

Preferred data source: Progress notes, culture reports, discharge summary, nursing records.

QUESTION 4.8: What best describes the patient's nutritional intake in the 24-hours prior to diagnosis of the event? Check all that apply.

Nutritional intake: Indicate the type of diet that the person was taking 24-hours prior to the event and then state when the patient was started on the diet and the amount consumed within the 24-hour period prior to diagnosis. For example: If the patient had a hypoglycemic event that was discovered at 10 am on 12/12/2006. State the diet for the past 24-hours, when the patient was started on this diet, and intake from the previous 24-hour period (10 am on 12/11 to 12/12). If the patient had been NPO since 12/10/27007 but had been started on clear liquids at 4 pm on 12/11/2006, you would include both the NPO status and clear liquid status along with how many cc's of fluid the patient consumed between 4 pm on 12/11 and 10 am 12/12. For regular diets, state the amount taken at each meal. For patients receiving tube feeding or parenteral nutrition include the amount infused within the 24-hour period.

Preferred data source: Intake and output record, dietary intake record of flowsheet, progress notes, dietary records.

QUESTION 4.9: What type and amount of IV fluid solution did the patient receive in the 24-hours prior to diagnosis? Select all that apply.

IV fluids: Include all intravenous fluids the patient received along with the amounts infused in the 24-hour period prior to the diagnosed complication. Include fluids contained in piggyback medications. For patients that were

transferred between nursing floors, had special procedures, or went to the operating room, be sure to check all records.

Colloids synonyms and inclusion:

- ☐ Hetastarch or hetastarch 6%
- ☐ Pentastarch or pentastarch 10%
- ☐ Dextran, Dextran 40 (10%) or Dextran 70 (6%)
- ☐ Albumin

Preferred data sources: Intake and output records, nursing flow-sheets, operative records, special flow-sheets, physician records.

ANSWER THE FOLLOWING TWO QUESTIONS IF THE PATIENT HAD A HYPOGLYCEMIC EVENT (OTHER DIABETIC COMA).

QUESTION Hypo.1: Lowest plasma glucose level (any method)

Lowest glucose: Record the lowest glucose level associated with the event. It is permissible to use bedside glucometer reading (e.g., finger stick). Serum, capillary, venous or arterial blood is acceptable. Most hospitals perform a finger stick followed by a laboratory sample to taken at the time of diagnosis (either prior to or immediately after initial treatment). If the blood sugar is too low to register on the glucometer, check the corresponding box. This is especially important if a laboratory value was not performed prior to treatment.

_ _ _ mg/dL or _._ mmol/L laboratory

_ _ _ mg/dL or ☐ for too low to register [LLL] per glucometer

Preferred data sources: Diabetic record, nursing records, laboratory records, physician progress notes.

QUESTION Hypo.2: Did the patient have any of the following signs and symptoms associated with their hypoglycemic event?

Symptoms: Although the patient may have had other signs and/or symptoms of hypoglycemia, we are only interested in seizure or seizure type activity, coma, confusion and/or delirium.

Definition of coma is when the patient that cannot be awakened, fails to respond normally to pain or light, does not have sleep-wake cycles, and/or cannot take voluntary action.

Preferred data sources: Nursing records, physician progress notes.

Branching pattern:

ANSWER THE FOLLOWING TWO QUESTIONS IF THE PATIENT HAD A HYPERGLYCEMIC EVENT (DIABETIC KETOACIDOSIS).

QUESTION DKA 1: Highest plasma glucose level (any method)

Highest glucose: Record the highest glucose level associated with the event regardless of method (e.g., laboratory, point of a care and/or bedside glucometer reading). Serum, capillary (e.g., finger stick), venous or arterial blood are all acceptable. Most hospitals perform a finger stick followed by a laboratory sample to taken at the time of diagnosis (either prior to or immediately after initial treatment). Often the blood glucose is too high to register on the glucometer. When the glucose is too high per glucometer, use the corresponding laboratory result. Note that the glucometer reading was too high.

Preferred data sources: Diabetic record, nursing records, laboratory records, physician progress notes.

QUESTION DKA 2: Highest serum ketone level

Highest ketone: Record the highest serum ketone level associated with the event.

Preferred data sources: Laboratory records, physician progress notes, consultative notes, nursing records.

QUESTION DKA 3: Serum sodium closest to highest blood sugar

Highest sodium: Record the highest serum sodium level associated with the event, preferably drawn at the same time as the glucose.

Preferred data sources: Laboratory records, physician progress notes, consultative notes, nursing records.

QUESTION DKA 4: Serum chloride closest to highest blood sugar.

Highest ketone: Record the highest chloride level associated with the event, preferably drawn at the same time as the glucose. If not available, leave blank.

Preferred data sources: Laboratory records, physician progress notes, consultative notes, nursing records.

QUESTION DKA 5: Serum blood bicarbonate (CO_2) closest to highest blood sugar.

Highest bicarbonate: Record the serum bicarbonate level associated with the highest blood glucose, preferably drawn at the same time as the glucose. If not available, leave blank.

Preferred data sources: Laboratory records, physician progress notes, consultative notes, nursing records.

QUESTION DKA 6: Lowest blood pH

Lowest pH: Record the lowest blood pH associated with the event. The blood pH will be part of the arterial blood gas results.

Preferred data sources: Laboratory records, physician progress notes, consultative notes, nursing records.

QUESTION DKA 7: Urine ketones (nitroprusside method)

Highest ketone: Record the highest urine ketone level associated with the event. This will most likely be performed by urine dipstick.

Preferred data sources: Laboratory records, physician progress notes, consultative notes, nursing records.

QUESTION DKA 8: What symptoms did the patient manifest?

Symptoms: Although the patient may have had other signs and/or symptoms of hyperglycemia, we are only interested in new seizure or seizure type activity, new confusion and/or delirium, and new lethargy/coma. Do not include changes if they are not related to hyperglycemia such as known dementia, drug intoxication, psychiatric illness, etc. AND/OR if the patient was experiencing these symptoms at baseline.

Altered level of consciousness, confusion or delirium synonyms and inclusions:

- ☐ Jumbled or disorganized though
- ☐ Unusual or bizarre behavior for patient
- ☐ Difficulty solving problems, usually able to solve at baseline
- ☐ Difficulty performing tasks, normally able to solve
- ☐ Inability to identify whereabouts or recognize family or familiar objects
- ☐ Disorientation
- ☐ Inability to focus attention compared to baseline

Coma synonyms and inclusions:

- ☐ Unconscious

- ☐ Unarousable
- ☐ Unresponsive to verbal and/or physical stimuli

Preferred data sources: Laboratory records, physician progress notes, consultative notes, nursing records.

For Hyperosmolar Nonketotic Syndrome (HNKS) or state:

QUESTION HNKS 1: Highest plasma glucose level (any method)

Highest glucose: Record the highest glucose level associated with the event regardless of the method (e.g., laboratory, point of care and/or bedside glucometer reading). Serum, capillary (e.g., finger stick), venous or arterial blood is acceptable. Most hospitals perform a finger stick followed by a laboratory sample to taken at the time of diagnosis (either prior to or immediately after initial treatment). Often the blood glucose is too high to register on the glucometer. When the glucose is too high per glucometer, use the corresponding laboratory result. Note that the glucometer reading was too high to register.

Preferred data sources: Laboratory records, physician progress notes, consultative notes, nursing records.

QUESTION HNKS 2: Highest osmolarity

Osmolarity: Record the highest osmolarity. If the highest osmolarity is not available, record the patient's serum sodium, BUN, and glucose from the blood draw at the time closest to the time of diagnosis and associated with the highest glucose level. If the osmolality was performed instead of osmolarity, record this value as well as the electrolytes if available.

Preferred data sources: Laboratory records, physician progress notes, consultative notes, nursing records.

QUESTION HNKS 3: What symptoms did the patient manifest?

Symptoms HNKS: Although the patient may have had other signs and/or symptoms of HNKS, we are only interested in seizure or seizure type activity, confusion and/or delirium, and lethargy/coma. Do not include changes if the if not diabetes related such as known dementia, drug intoxication, psychiatric illness, etc. AND/OR if the patient was experiencing these symptoms at baseline.

Altered level of consciousness, confusion or delirium synonyms and inclusions:

- ☐ Jumbled or disorganized though
- ☐ Unusual or bizarre behavior for patient

- ☐ Difficulty solving problems, usually able to solve at baseline
- ☐ Difficulty performing tasks, normally able to solve
- ☐ Inability to identify whereabouts or recognize family or familiar objects
- ☐ Disorientation
- ☐ Inability to focus attention compared to baseline

Coma synonyms and inclusions:

- ☐ Severe lethargy
- ☐ Unconscious
- ☐ Unarousable
- ☐ Unresponsive to verbal and/or physical stimuli

Preferred data sources: Nursing records, diabetic flowsheet, physician progress notes, consultative notes.

Branching pattern:

COMPLETE THE FOLLOWING QUESTIONS FOR ALL DIABETIC RELATED EVENTS:

QUESTION 4.10: Where in the hospital did the event take place?

Location: State the area that the patient was assigned when the diagnosis or condition was first diagnosed. If none of the selections appropriately describe the location, select other and write in a short description of the area where the patient was assigned at the time of the event. A monitored unit outside of the ICU is generally considered a step-down or special observation unit. If the patient was a “boarder” in the emergency department, such as when there were no hospital beds and the patient is required to remain in the ED for an extended period of time, select other and explain.

Preferred data sources: Nursing notes, physician records, special procedure notes (if it occurred during a special procedure, etc), operating records (if first diagnosed in the OR).

QUESTION 4.11: Because of the event, was the patient moved to a higher level of care?

Higher care: If because of the event, the patient was transferred to a higher level of care within the hospital, answer YES and state where the patient were the patient was transferred to. Answer NO if the patient was already in ICU, the highest level of care.

Preferred data sources: Physician records, nursing notes, physician orders.

Section 5: Renal failure

QUESTION 5.1: Did the patient experience new onset of renal failure post-operatively that required dialysis?

Renal failure: If the patient did not acquire renal failure post-operatively that required dialysis, answer NO. If Q 4.2 and 5.1 are both NO, end the form. If the patient had a diabetic complication as indicated by a YES response to question 4.2, skip to section 6 and continue abstracting the chart.

Preferred data sources: Physician records, physician orders, consultative records, procedure records.

QUESTION 5.2: Type of dialysis and date started. Select all that apply.

Dialysis: Select the type(s) of dialysis the patient received and the date and time of the first treatment for each method selected.

Hemodialysis synonyms and inclusions:

- ☐ Conventional hemodialysis
- ☐ Hemodiafiltration
- ☐ Hemofiltration
- ☐ Intermittent hemodialysis (IHD)
- ☐ Continuous renal replacement therapy (CRRT)
- ☐ Continuous arteriovenous hemofiltration (CAVH)
- ☐ Continuous venovenous hemofiltration (CVVH)
- ☐ Continuous arteriovenous hemodiafiltration (CAVHDF)
- ☐ Continuous venovenous hemodiafiltration (CVVHDF)

Peritoneal dialysis (PD) synonyms and inclusions:

- ☐ Continuous ambulatory peritoneal dialysis (CAPD)
- ☐ Continuous cycling peritoneal dialysis (CCPD)
- ☐ Automated Peritoneal Dialysis (APD)
- ☐ Peritoneal dialysis with a cycler

Do not include coupled plasma filtration adsorption (CPFA) or a similar variant aimed at nonselective reduction of the circulating levels and activities of pro- and anti-inflammatory mediators and/or other serum antibodies.

Preferred data sources: Physician records, physician orders, consultative records, procedure records.

QUESTION 5.3: What date was renal insufficiency or failure first suspected in the medical record?

Date: Provide the first date that renal insufficiency or failure was first suspected or diagnosed in the medical record. Use physician or physician extender documentation

Preferred data sources: Physician records, physician orders, consultative records, operative notes, procedure records.

QUESTION 5.4: What was the most likely cause of the renal failure (physician documentation)?

Causation: Select the most likely cause of the renal failure.

- ☐ A decrease in effective blood volume such hypovolemia related to loss of volume such as that associated with hemorrhage, burns, GI losses, and renal loss.

- ☐ A relative decrease in blood volume associated with low cardiac output states such as congestive heart failure (CHF), tamponade, and other diseases of the myocardium, valvulopathy, sepsis, and liver failure.

- ☐ Post renal failure due to arterial occlusion. This requires bilateral thromboembolism or occlusion under most circumstances as unilateral occlusion alone is usually not sufficient to cause renal failure unless one kidney is already diseased or absent.

- ☐ The most common nephrotoxin medications include aminoglycoside antibiotics such as tobramicin, genamicin, amikacin and netilmicin; iodinated contrast agents; chemotherapeutic agents (esp. Cisplantin); and solvents.

- ☐ Besides nephrotoxicity, some antibiotics such as methicillin can cause an acute interstitial nephritis resulting from immune-mediated tubulointerstitial injury.

- ☐ Acute glomerulomephritis (e.g., postinfectious glomerulonephritis, anti-basement membrane antibody disease, lupus nephritis, Good pasture's syndrome and Pauci-immune glomerulonephritis)

- ☐ Endogenous nephrotoxicity may be due to intratubular obstruction caused by crystals such as uric acid, calcium oxalate, calcium phosphate, acyclovir, sulfadiazine, indinavir, methotrexate, or by paraprotein (myeloma cast nephropathy).

Preferred data sources: Physician records, physician orders, consultative records, operative notes, procedure records.

QUESTION 5.5: Did the patient have any of the following at the time of admission?

Risk factors: State whether the patient had any of the listed conditions at the time of admission. Include recent trauma within 6 weeks of admission and/or if the patient was still receiving significant treatment for the trauma or its complications.

Preferred data sources: Physician records, physician orders, consultative records, procedure records.

QUESTION 5.6: Did the patient receive any of the following during hospitalization?

Angiotensin Converting Enzyme (ACE) Inhibitors

- ☐ Captopril (Capoten®)
- ☐ Enalapril (Vasotec®/Renitec®)
- ☐ Ramipril (Altace®/Tritace®/Ramace®/Ramiwin®)
- ☐ Quinapril (Accupril®)
- ☐ Perindopril (Coversyl®)
- ☐ Lisinopril (Lisodur®/Lopril®/Novatec®/Prinivil®/Zestril®)
- ☐ Benazepril (Lotensin®)
- ☐ Fosinopril (Monopril®)

Angiotensin II Receptor Blockers (**ARB)**

- ☐ Candesartan (Atacand®)
- ☐ Eprosartan (Tevetan®)
- ☐ Irbesartan (Avapro®)
- ☐ Telmisartan (Mycardis®)
- ☐ Valsartan (Diovan®)
- ☐ Losartan (Cozaar®).

Nonsteroidal anti-inflammatory (NSAIDS)/ Cyclooxygenase-2 inhibitors (COX-2) (non-inclusive list):

- ☐ Acetaminophen (*Anacin-3 Maximum Strength®, Childrens Tylenol®, Tylenol®, Tylenol Caplet®, Tylenol Caplet Extra Strength®, Tylenol Extended Release®, Tylenol Extra Strength®, Tylenol Gelcap Extra Strength®, Tylenol Suspension®*, Tylenol number 3, Tylenol with codeine, Acetaminophen with codeine*)*
- ☐ Celecoxib (Celebrex®)
- ☐ Diclofenac (Voltaren®)
- ☐ Diflunisal (Dolobid®)
- ☐ Etodolac (Lodine®)
- ☐ Ibuprofen (Motrin®, Advil®, Motrin IB®)
- ☐ Ketorolac (Toradol®)
- ☐ Ketoprofen (Orudis®)

- ☐ Indomethacin (Indocin®)
- ☐ Meloxicam
- ☐ Nabumetone (Relafen®)
- ☐ Naproxen (Naprosyn®, Aleve®)
- ☐ Oxaprozin (Daypro®)
- ☐ Piroxicam (Feldene®)
- ☐ Salsalate (Amigesic®)
- ☐ Sulindac (Clinoril®)
- ☐ Tolmetin (Tolectin®)

Preferred data sources: Physician orders, medication administration records, physician records, consultative records, and procedure records.

QUESTION 5.7: Did the patient receive any contrast medium? If YES, state the type and amount. Include contrast medium that may have been given during surgery.

Ionic synonyms and inclusions:

- ☐ Diatrizoate
- ☐ Iothalamate
- ☐ Metrizoate

Non-ionic synonyms and inclusions:

- ☐ Metrizamide
- ☐ Iopamidol
- ☐ Iohexol

Gadolinium is most often used as the radiologic agent with enhanced magnetic resonance angiography (MRA) imaging.

Preferred data sources: Surgical reports, procedure reports, diagnostic records, physician records.

QUESTION 5.8: Date and amount of lowest urine output in a 24-hour period

Lowest urine output: State the date of the lowest urinary output in a 24-hour period along with the amount of urine produced in the 24-hour period.

Preferred data sources: Intake and output records, nursing notes, physician records, dialysis records.

QUESTION 5.9: Highest plasma creatinine

Creatinine: Provide the highest serum plasma creatinine level obtained post-operatively along with the time and date of collection.

Preferred data sources: Laboratory records, nursing notes, physician records.

QUESTION 5.10: Highest Blood Urea Nitrogen (BUN)

BUN: Provide the highest serum blood urea nitrogen level obtained post-operatively along with the time and date of collection.

Preferred data sources: Laboratory records, nursing notes, physician records

QUESTION 5.11: Did the discharge plan include dialysis post-discharge?

Post-discharge dialysis: State if the discharge plan of care included post-hospital dialysis. Only mark critical documentation missing if records are not available to clearly answer this question.

Preferred data sources: Discharge summary, discharge records, physician records, dialysis records, consultative records.

Section 6: Operative factors

Complete section for all patients that either section 4 and/or 5 applied.

QUESTION 6.1: Pre-operative height _ _ _._ (cm) OR _ ._ ft _ _ inches

Height: State the patient's height closest to the time of admission.

Preferred data sources: Admission data sources, nursing records, anesthesia records.

QUESTION 6.2: Pre-operative dry weight _ _ _ ._ (kg)

Weight: State the patient's weight closest to the time of admission. The most accurate preoperative weight may have been performed as part of the pre-operative visit. Use a dry weight if available and try to avoid patient stated weights (if able).

Preferred data sources: Admission data sources, nursing records, anesthesia records.

QUESTION 6.3: ICD-9-CM principal procedure code and date

ICD-9-CM codes: State the ICD-9-CM principal procedure code along with the date performed.

Preferred data sources: Coding sheet, surgical/procedure report.

QUESTION 6.4: ICD-9-CM other procedure code(s) and date(s)

Other ICD-9-CM codes: State the other ICD-9-CM procedure codes along with the corresponding procedure date.

Preferred data sources: Coding sheet, surgical/procedure report(s).

QUESTION 6.5: Procedure (induction) start date and time of index surgery:

Start time: Enter the time that the surgery was started. This is also known as induction time or anesthesia start time.

Preferred data sources: Anesthesia record, operating room records.

QUESTION 6.6: Surgical incision date and time of index surgery:

Incision time: Enter the date and time that the incision was made (e.g., incision time or operating room start time). In some hospitals, the incision time may be indicated by a mark on the monitoring portion of the anesthesia care record.

Preferred data sources: Anesthesia record, operating room records.

QUESTION 6.7: Surgical closure date and time of index surgery.

Closure time: Enter the date and time that the wound/incision was closed. This is not the same as the anesthesia stop or end time, room out time, operating room end time or PACU arrival time.

Preferred data sources: Anesthesia record, operating room records.

QUESTION 6.8: Anesthesia end date and time of index surgery.

Surgical end time: Enter the time that the operation concluded (anesthesia end time). This is different and occurs earlier than the room out time or PACU arrival time.

Preferred data sources: Anesthesia record, operating room records.

QUESTION 6.9: Method of anesthesia of index surgery:

Type of anesthesia: Select the primary method of anesthesia used. If more than one type was used, select the one of the highest order.

Preferred data sources: Anesthesia record, operating room records.

QUESTION 6.10: Was the surgery performed completely by laproscopy?

Laproscopy: State if the primary operative procedure was performed completely by laparoscopy (either open or closed).

Preferred data sources: Surgical report, physician notes, anesthesia record, operating room records.

QUESTION 6.11: Fluid intake and output during surgery

Intake and output: Enter the fluid intake and output during surgery. Use the surgeon's record followed by the anesthesia report.

Preferred data sources: Surgical reports, anesthesia record, operating room record.

Section 7: Outcomes

QUESTION 7.1: Deposition at discharge

Deposition: State where the patient was transferred to at discharge. Home may be with or without home health regardless of amount of help required. If the patient expired, state if the death was related to the metabolic derangement. If the place of disposition is not listed and does not fit any of the selections listed, select other and provide a short description.

Preferred data sources: Discharge summary, discharge records, nursing notes, discharge planning records, social worker records.

QUESTION 7.2: Was the patient readmitted to your facility within 30 days of discharge?

Readmitted: State if the patient was readmitted to hospital within 30 days of discharge. Only select critical documentation missing if the record is not available.

Preferred data sources: New history and physical or face sheet for other documentation associated with a subsequent admission.

QUESTION 7.4: If yes to Q7.3, was the reason for re-admission related to metabolic derangement?

Readmission: If the patient was readmitted, state if the reasons for readmission was related to diabetes or renal disease (failure or dysfunction). Only mark critical documentation missing if the reason for readmission is unclear or if the required documentation to make the determination for readmission is missing.

Preferred data sources: New history and physical or face sheet for other documentation associated with a subsequent admission.

QUESTION 7.5: Did the patient expire within 30 days of discharge?

Expiration after discharge: State if the patient expired within 30 days of discharge. If yes, state if the death was related to diabetes, renal failure or if the cause was unknown. Only mark critical documentation missing if there is a lack of documentation present to determine if the patient expired. For most cases, the lack of documentation supports a “no” response.

Preferred data sources: Death certificate or other documentation suggesting that the patient expired.

QUESTION 7.6: If there are special circumstances or comments related to this case that you feel are important that were not captured in the survey, please state these in the TEXT BOX provided [limit 200 characters]:

Preferred data sources: Medical record.