Data Dictionary for Inappropriate Diagnosis of UTI Measure -CSM/Utah

To accurately assess inappropriate diagnosis of UTI, it is necessary that the correct population is being assessed and that a standardized method for collecting data is used. This data dictionary provides guidance for using the Inappropriate Diagnosis of UTI REDCap abstraction tool.

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# Link to REDCap Abstraction Tool

When you are ready to begin a case abstraction, you can locate the REDCap survey here: <https://redcap.link/Case_Abstraction_Form>

# Hospital

Indicate your hospital by checking the appropriate box or by typing it in, if not listed.

# Time Abstractor Begins Case Review

Indicate the time of day the abstractor starts the case review.

# Case Code

The case code is a 5-digit numerical identifier to be used in lieu of MRN to protect patient privacy, e.g., 00001, 00002, etc. Each hospital should maintain a key that links each case code with the corresponding MRN to allow for auditing case reviews in the future.

# Inclusion Criteria

The first step is ensuring that patients meet inclusion criteria. There are seven key factors that should be reviewed at this time. Note: It may be possible through your electronic health record to automatically remove some of these patients (e.g., by age, service to reduce the need for manual exclusion.

| Criterion | **Operationalized Definition** |
| --- | --- |
| Adult | Age >/= 18 years on admission |
| Positive urine culture | A positive urine culture is defined as those flagged as positive by the hospital's lab/institution. |
| Do not consider the urine culture “positive” if the ONLY organism listed in aspergillus or candida |
| Admitted to a non-ICU medicine service | Medicine service includes family medicine, hospital medicine, general medicine, or any medicine subspecialty (e.g., cardiology); does not include patients admitted to any ICU, surgical service, OB/GYN, etc. |
| EXCLUDE: Patients transferred from another hospital or from another inpatient unit (e.g., inpatient psych, inpatient rehab). |
| INCLUDE: Patients transferred from emergency department to emergency department (ED to ED). |
| Received any antibiotic intended to treat UTI during the symptom collection window (day -1, 0, 1, 2, where day 0 = day first positive urine culture was collected) | Select from Antibiotic choices listed in REDCap abstraction form (IV and oral antibiotics are also listed in this document, in **Antibiotics** section) |
| Immunocompetent or only mild immune compromise | Patients are NOT considered immunocompetent or having only mild immune compromise (and thus excluded) if any of the following are present – Exclude if: |
| Patient has any history of transplant, including heart, liver, kidney, lung, pancreas, bone marrow, stem cell, or hematopoietic stem cell transplant |
| AIDS: Patient has a diagnosis of HIV with CD4 count <200 cells/mm3 on admission or within the 90 days prior to the hospital encounter |
| *Note1*: CD4 count can be found in the laboratory section. It can be part of an immunodeficiency panel and is labeled as absolute CD4 count. |
| *Note 2*: If the patient has a diagnosis of HIV without a CD4 count < 200 or a CD4 count < 200 without HIV, they are eligible. |
| Patient has neutropenia (ANC <0.5) at the time of the urine culture or in the two days prior to the urine culture |
| *Note 1*: ANC stands for Absolute Neutrophil count. This can be found in the laboratory section as a part of a CBC with differential. Include labs titled Abs Polynuc Neutrophil Count, Neutrophil number |
| *Note 2*: If the Absolute Neutrophil Count (ANC) value is listed as “Suppressed” and the White Blood Cell (WBC) Count is 0, this patient should be excluded. |
| Treated only for UTI or infection secondary to UTI (e.g., sepsis, bacteremia, *C Diff*) during hospitalization | Patients on antibiotic treatment for a concomitant bacterial infection anytime during the hospital encounter (ER, Obs, Inpatient) except those infections that are secondary to UTI (e.g., sepsis, bacteremia, or *Clostridiodes difficle* infection [*C Diff*]) are ineligible. Patients who are discharged with a prescription for an antibiotic for a concomitant infection are also ineligible. |
| Allowable concomitant antibiotic therapy (not generally intended for a bacterial infection) includes: |
| Topical antibiotics including ointments (e.g., erythromycin ointment), salves, powders and ophthalmic (eye) drops or ear drops (e.g., Ciprofloxacin ophthalmic solution). |
| Patients who receive antibiotics for conditions which are not concomitant infections such as Common Variable Immune Deficiency (CVID), rosacea, hepatic encephalopathy, Non-Alcoholic Steatohepatitis (NASH), Rheumatoid Arthritis (RA), and Syndrome of Inappropriate Antidiuretic Hormone Secretion (SIADH) are eligible. (e.g., rifaximin) |
| Patients who receive antibiotics for surgery pre- or peri-operative are eligible. |
| Patients undergoing treatment with antibiotics ordered for prophylaxis of a potential concomitant infection are NOT eligible. |
| Patients treated for COVID-19 during hospitalization are ineligible. Prior COVID or incidental COVID that is not treated is eligible. |
| Have normal urinary anatomy | Patients with urinary stent, nephrostomy, altered urinary tract anatomy, or urologic surgery during hospitalization are ineligible. |

If any of the Inclusion Criteria are not met, the following message will appear: “This case does not meet inclusion criteria. Please scroll down to the bottom of this form and click ‘Submit’ and move on to the next case review by clicking on the link (https://redcap.link/Case\_Abstraction\_Form)”. Please remember to click “Submit”, even for cases that do not meet inclusion/exclusion criteria.

# Exclusion Criteria

Exclusion criteria should be reviewed before beginning full abstraction.

| **Criterion** | **Operationalized Definition** |
| --- | --- |
| Patients who left against medical advice (AMA) or refused care | Patient left against medical advice (AMA) or refused recommended medical care during the hospital encounter (ok to include if only refused medical care unrelated to UTI, e.g., VTE prophylaxis). |
| Patients admitted on hospice | Patient has an order for palliative care/comfort care during the hospital encounter |
| *Note:* the patient is eligible for abstraction if they have a palliative care consult or consult only and no orders for palliative care or comfort care are written during the encounter. The patient is also eligible for abstraction if the patient is on palliative care for pain management only or if the patient has an order for palliative care/comfort care after transfer to the ICU. |
| Pregnant | Documentation of a pregnancy during or within 30 days prior to the hospital encounter. |
| Spinal cord injury | Documentation of a spinal cord injury prior to the hospital encounter.  INCLUDE: Spina Bifida, cerebral palsy  EXCLUDE: Paralysis due to spinal stenosis. |
| Had a UTI complication (e.g., perinephric abscess) | Prescribed >14 days of antibiotics (excluding topical antibiotics or other exceptions below) at discharge. Antibiotic exceptions: |
| Topical antibiotics include ointments (e.g., erythromycin ointment), salves, powders and ophthalmic (eye) drops or ear drops (e.g., Ciprofloxacin ophthalmic solution). |
| Patients who receive antibiotics given for conditions which are not concomitant infections such as Common Variable Immune Deficiency (CVID), rosacea, hepatic encephalopathy, non-alcoholic steatohepatitis (NASH), rheumatoid arthritis (RA), and syndrome of inappropriate antidiuretic hormone secretion (SIADH) are eligible. |
| Antibiotics directed at prevention/treatment of *C difficile* infections |

If any of the Inclusion Criteria are not met, the following message will appear: This case is excluded. Please move on to the next case review. Please scroll to the bottom of this form and click 'submit' and move on to the next case review by clicking on the link (<https://redcap.link/Case_Abstraction_Form>). Please remember to click “Submit”, even for cases that do not meet inclusion/exclusion criteria.

**Was the patient breastfeeding?** Documentation of breastfeeding during or within 30 days prior to the hospital encounter (Yes, No, N/A, Unknown).

# Hospitalization

## Location at the time of culture

Indicate the setting in which the urine culture was obtained. If cultures were obtained outside the inpatient or ED setting, the following message will appear.

“If possible, all case abstractions should be for patients treated in the hospital/acute care setting or the ED. If your hospital does not have enough of these cases and you have discussed this with the study team, then please continue with case abstraction. Otherwise, please select the next patient who was treated in the hospital/acute care setting or the ED”. Please contact the study team if your hospital does not have enough cases from the inpatient or ED setting to meet abstraction goals.

## Was the culture reflexed from a urinalysis (UA)?

Indicate whether this was a reflex culture (yes or no).

## Date of Hospital Encounter:

Review the medical record to determine the date the patient first entered the hospital system (or the date the patient made first contact with the hospital, [ER, observation unit, inpatient]). Indicate the date in the mm/dd/yyyy format).

## Date of Admission to Hospital:

Review the medical record to determine the date the patient was admitted to the hospital as an inpatient status. Do not record the date the patient arrived in the emergency room or was admitted to an observation unit as the date of inpatient admission. Record the date in mm/dd/yyyy format.

## Date first positive urine culture was collected: This is defined as Day 0

Review the medical record to determine the date first positive urine culture was collected/drawn. This is the collection date, NOT the date the positive urine culture was reported or ordered.

## Date of Discharge from Hospital:

Review the medical record to determine the date the patient was discharged from the hospital encounter. If the patient is deceased (during the hospital encounter), this would be the date of death. If the patient was transferred to the intensive care unit (ICU), this would be the date the patient was eventually discharged from the hospital after their stay in the ICU. Indicate the date in the mm/dd/yyyy format.

# Demographics

Report demographics at time of hospital admission from the medical record:

Age on date of admission in years (range of 18-100)

Sex (Male, Female, Other or Not Specified)

Race (White, Black, Asian, Pacific Islander, American Indian or Alaska Native, Multiracial, Other, or Unknown/Not Specified)

Ethnicity (Hispanic/Latinx, Not Hispanic/Latinx, or Unknown/Not Specified)

# Co-Morbidities

| **General Co-Morbidities** | **Criteria** |
| --- | --- |
| Diabetes | Review the medical record to determine if the patient has type 1 or type 2 diabetes during the hospitalization. This includes patients treated for diabetes who have a normal A1C. |
| End Stage Renal Disease (ESRD) | Review the medical record to determine if the patient has end stage diabetes (i.e., is on dialysis) during the hospitalization. |
| Dementia | Review the medical record to determine if the patient has documented dementia during hospitalization. Examples include (but are not limited to) loss of cognitive function due to illness - Alzheimer's, cerebral anoxia, chronic alcoholism, CO2 poisoning, hypothyroidism, multiple brain infarcts, vascular dementia, Parkinson's, subdural hematoma, Vitamin B12 deficiency; vascular dementia. Exclude temporary loss of cognitive function, acute delirium, drug-related delirium or withdrawal, developmental delay, or cognitive impairment.  Note: Only select if patient has long-term cognitive dysfunction. For example, some patients with Alzheimer's or Parkinson's have long-term cognitive dysfunction related to the disease and, in this case, it would be appropriate to select this field. However, some patients have Parkinson's without dementia, and in that scenario, it would not be appropriate to select this field. |
| Admitted from skilled nursing facility (SNF) or long-term assisted care facility (LTAC) | Please review the medical record to determine if the patient was transferred to the hospital from another skilled facility (i.e., a sub-acute rehabilitation center, skilled nursing home, acute rehabilitation center, or assisted living). This category does not include ransfer from another hospital or transfer from a facility that is the patient's usual place of residence (such as an adult foster care center). |
| Immune suppression not severe enough to be excluded | This includes patients with HIV with CD4>200, on chronic low-dose steroids (<20 mg prednisone/day), or <2 immunosuppressive agents |
| **Urologic Co-Morbidities** | |
| Urologic procedures in 30 days prior to admission | Review the medical record to determine if there is a history of urologic surgery in the 30 days prior to the hospital encounter (ER, observation unit, inpatient). Include transurethral resection of the prostate (TURP). Reminder, if the patient had a urologic surgery or urologic procedure during the hospital encounter, this patient would be ineligible for abstraction. |
| Chronic urinary catheter use (i.e., foley) | Review the medical record to determine if the patient had a Foley catheter on the day before or day of the hosptial encounter (i.e., walk in the door with a Foley catheter in place). |
| Chronic intermittent straight catheterization | Review the medical record to determine if the patient used intermittent straight catheterization prior to the hospital encounter. |
| History of prostate cancer within the past year | Review the medical record to determine if the patient has a past or present history of prostate cancer. Please indicate only the primary site of the cancer and not sites of metastasis. Benign prostatic hyperplasia should be excluded. |
| Neurogenic bladder or urinary retention | Review the medical record to determine if there is documentation of urinary retention prior to the hospital encounter or during the hospital encounter. This includes patients for which the medical record indicates the patient has a diagnosis of urinary retention during the hospital encounter or indicates a history of urinary retention in the 30 days prior to the hospital encounter. |

# SIRS Criteria and Organ Dysfunction

Information in the section should be recorded relative to the day the first positive urine culture was collected, Day 0, and includes the day before Day 0 (Day -1) through the 2 days following Day 0 (Day 1 and Day 2). For reference, the date of Day 0 is indicated in the matrix header.

If no data are available for any of these days, please check “No data are available for this day”. If, on any of the days, all SIRS criteria in the table are negative, please check the last box, “None of the above (all negative)”. This documents that at least some data were available for review, and all available were negative.

|  |  |
| --- | --- |
| **SIRS Criteria** | **Operationalized Definition** |
| Temperature > 38.0 C | Review the medical record to determine if any of the following signs or symptoms are documented as present either the day before the urine culture was collected (day -1), the day the urine culture was collected (day 0), or in either of the two days following urine culture collection (day 1 or 2). |
| Temperature < 36.0 C |
| Heart rate (HR) > 90 bpm |
| Respiratory rate (RR) > 20 br/min |
| White blood cell count (WBC) > 10 K/uL |
| Hypotension (SBP < 90 mmHg) |
| New organ dysfunction (thought secondary to infection | Select if the laboratory data/medical documentation indicates **new** (not previously documented)Creatinine (Cr)>2 mg/dL; Bilirubin >2 mg/dL; platelet < 100,000/uL; International normalized ratio (INR) > 1.5; lactate > 2 mmol/L; or systolic blood pressure (SBP) < 90 mm Hg. Do not count INR if patient is on warfarin. |
| Note: include patients with unknown chronicity (e.g., has a Cr 4.0 with no known medical history as patient has never seen a doctor or Cr never checked before) |

# Urinary Catheter

Information in the section should be recorded relative to the day the first positive urine culture was collected, i.e., Day 0 and includes the day before Day 0 (Day -1) through the 2 days following Day 0 (Day 1 and Day 2). For reference, the date of Day 0 is indicated in the matrix header.

Review the medical record to determine if a urinary catheter was in place on each day and if the patient had intermittent straight catheterization on each day. If no data are available for any of these days, please check “No data are available for this day”. If no catheters were used, please check the last box, “None of the above (both negative)”. This documents that data were available for review, and all criteria available were negative.

# Signs and Symptoms Related to UTI

Information in the section should be recorded relative to the day the first positive urine culture was collected, i.e., Day 0 and includes the day before Day 0 (Day -1) through the 2 days following Day 0 (Day 1 and Day 2). For reference, the date of Day 0 is indicated in the matrix header.

Review the medical record to determine if any of the following signs and/or symptoms were present on each day. Only documentation from physicians and/or advanced practice professionals should be used when documenting data in this area.

| **Sign/Symptom** | **Operationalized Definition** |
| --- | --- |
| Urgency | Review the medical record to determine if any of the following signs or symptoms are documented as present either the day before the urine culture was collected (day -1), the day the first positive urine culture was collected (day 0), or in either of the two days following urine culture collection (day 1 or 2). Note: Hypogastric pain should be considered suprapubic pain Note: Exclude nursing documentation, only use physician or advance practice professional documentation to answer this question. |
| Rigors |
| Frequency |
| Dysuria |
| Suprapubic pain or tenderness |
| Acute hematuria |
| Costovertebral or flank pain or tenderness |
|
| Documentation of pyelonephritis |
|
| Fever (>38 C) |
| New onset mental status changes WITH systemic signs of infection | "new mental status changes" include any medical documentation in day -1 to +2 indicating the patient had new or worsening mental status (e.g., confusion, delirium, obtunded) |
| EXCLUDE: Individuals with altered mental status at baseline that has not been documented as “worsening”. Exclude visual, tactile or auditory hallucinations only. |
| INCLUDE: Documentation that the patient had a reduced level of consciousness, reduced awareness, comatose, etc. |
| New onset mental status changes WITHOUT systemic signs of infection | Systemic signs of infection: |
| Leukocytosis (>10 K/uL) |
| Hypotension (systolic blood pressure (SBP) <90 mm Hg) |
| ≥2 systemic inflammatory response syndrome (SIRS) criteria (see following page for SIRS definition) |

If no data are available for any of these days, please check “No data are available for this day”. If no signs or symptoms are present, please check the last box, “None of the above (all negative)”. This documents that data were available for review, and all criteria available were negative.

# Micro Data

Review the microbiology report to document: bacteria found in the urine culture; urinalysis results; blood culture results (if performed) and organism present in blood culture, if any.

# Antibiotic Information

Review the medical record and indicate the date the patient first received antibiotics.

Please enter all antibiotics ordered and administered during the hospital encounter (ER, observation unit, inpatient) EXCEPT:

* Antibiotics ordered, but not given.
* Perioperative antibiotics, including those administered pre-operative, during surgery, and post-operative up to one day after surgery (e.g., antibiotics ordered/administered for surgery only).
* Antibiotics given for prophylaxis of non-concomitant infections/conditions such as Common Variable Immune Deficiency (CVID), rosacea and Rheumatoid Arthritis, and Symptom of Inappropriate Antidiuretic Hormone Secretion (e.g., rifaximin)

Complete the questions for IV antibiotics received while inpatient and at discharge, if any, and for oral antibiotics received while inpatient and at discharge. If no antibiotics were received at discharge, please indicate.

## **Total inpatient IV antibiotic days:**

One inpatient day is considered one calendar day, which begins at 12:00 am and ends at 11:59 pm. The total number of IV antibiotic days equates to the number of calendar days on which a patient received an IV antibiotic. Please see above definition for what antibiotics are required to be submitted for each case.

## **Total inpatient oral antibiotic days:**

One inpatient day is considered one calendar day, which begins at 12:00 am and ends at 11:59 pm. The total number of IV antibiotic days equates to the number of calendar days on which a patient received an IV antibiotic. Please see above definition for what antibiotics are required to be submitted for each case.

## Total inpatient days (IV + oral):

Total inpatient IV antibiotic days and total inpatient oral antibiotic days (this could be less than inpatient IV plus oral added together if a patient received both IV and oral antibiotics on the same day).

## Total discharge antibiotic days:

Total discharge antibiotic days should be counted in calendar days and calendar "half-days" upon discharge. For example: A patient given zosyn at 11:59 pm should still count as an entire day; A patient given one dose of cefuroxime while still in the hospital on the day of discharge would be considered to have 1 day of antibiotic. If a patient was given one dose of cefuroxime to take at home on the evening of discharge this is counted as 0.5 days. A prescription for 7 doses of cefuroxime at discharge would be counted as 3.5 days.

## Total treatment antibiotic duration:

Sum of total inpatient antibiotic days and total discharge antibiotic days.

## Time abstractor finishes case review:

Please note the time in which case abstraction was completed.

## Total abstraction time:

Please enter the total amount of time for the case abstraction (subtract any time from interruptions)

# Antibiotics

Primary and less common IV and oral antibiotics used to treat UTI.

| **IV Generic - Primary** | **IV Brand - Primary** | **IV Generic - Less Common** | **IV Brand - Less Common** | **Oral Generic - Primary** | **Oral Brand - Primary** | **Oral Generic - Less Common** | **Oral Brand - Less Common** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Ampicillin/ Sulbactam | Unasyn | Amikacin | Amikin | Amoxicillin | Novamax, Amoxil, Amoxicot, Dispermax, Moxatag, Moxilin, Trihydrate, Trimax, Wymax | Azithromycin | Zithromax, Sumamed, Zitrocin |
| Cefazolin | Ancef, Kefzol, Zolicef | Ampicillin | Omnipen, Principen, Totacillin | Amoxicillin-clavulanate | Augmentin, Co-Amoxiclav | Clarithromycin | Biaxin |
| Cefepime | Maxipime | Azithromycin | Zithromax, Sumamed, Zitrocin | Cefdinir | Omnicef, Cefdiel | Delafloxacin | Baxdela |
| Ceftriaxone | Rocephin | Aztreonam | Azactam | Cefixime | Suprax | Dicloxacillin | Dycill, Dynapen |
| Ciprofloxacin | Cipro, Ciproxin, Ciprobay | Cefotaxime | Cephotaxime, Claforan | Cefpodoxime | n/a | Linezolid | Zyvox |
| Ertapenem | Invanz | Cefotetan | Cefotan | Cefuroxime | Ceftin, Kefurox, Zinacef | Metronidazole | Flagyl |
| Levofloxacin | Levaquin, Quixin | Cefoxitin | Mefoxin | Cephalexin | Cefalexin, Keflex, Keftal, Cefanox, Biocef, Panixine, Zartan | Minocycline | Minocycline hydrochloride, Minocin, Dynacin, Myrac, Solodayn, Vectrin |
| Meropenem | Merrem | Ceftaroline | n/a | Ciprofloxacin | Cipro, Ciproxin, Ciprobay |  |  |
| Metronidazole | Flagyl | Ceftazidime | Ceptaz, Fortaz, Tazicef | Doxycycline | Doxycycline hyclate, Doxy, Vibra, Vibramycin |  |  |
| Piperacillin-tazobactam | Zosyn | Ceftazidime-avibactram | Avycaz | Fosfomycin | Monurol |  |  |
| Trimethoprim-Sulfamethoxazole | Co-Trimaxazole, Sulfamethoxazole, Sulfisoxazole, Trimethoprim, Trimethoprim-Sulfamethoxazole, TMP-SMX | Ceftolozane/ Tazobactam | Zerbaxa | Levofloxacin | Levaquin, Quixin |  |  |
| IV Vancomycin | Vancocin, Lyphocin | Cefuroxime | Ceftin, Kefurox, Zinacef | Nitrofurantoin | Macrobid |  |  |
|  |  | Clindamycin | Cleocin | Trimethoprim- Sulfamethoxazole | Co-Trimaxazole, Sulfamethoxazole, Sulfisoxazole, Trimethoprim, Trimethoprim-Sulfamethoxazole, TMP-SMX |  |  |
|  |  | Colistin | Xylistin, Polymyxin E, Colistimethate |  |  |  |  |
|  |  | Dalbavancin | n/a |  |  |  |  |
|  |  | Daptomycin | n/a |  |  |  |  |
|  |  | Doripenem | Doribax |  |  |  |  |
|  |  | Doxycycline | Doxycycline hyclate, Doxy, Vibra, Vibramycin |  |  |  |  |
|  |  | Eravacycline |  |  |  |  |  |
|  |  | Gentamicin | Gentamycin, Garamycin, Cidomycin, Septopal, Gentamycin Synergy |  |  |  |  |
|  |  | Imipenem/cilastatin | Primaxin |  |  |  |  |
|  |  | Linezolid | Zyvox |  |  |  |  |
|  |  | Meropenem/vaborbactram | Vabomere |  |  |  |  |
|  |  | Moxifloxacin | Avelox |  |  |  |  |
|  |  | Nafcillin | Unipen, Nafcil, Nallpen |  |  |  |  |
|  |  | Oritavancin | LY333328 |  |  |  |  |
|  |  | Oxacillin | Prostaphilin, Bactocil, Prostaphlin |  |  |  |  |
|  |  | Penicillin | Benylpenicillin, Penicillin G, Bicillin C-R/L-A, Pfizerpen, Wycellin |  |  |  |  |
|  |  | Piperacillin |  |  |  |  |  |
|  |  | Telavancin | TD-6424, Vibativ |  |  |  |  |
|  |  | Tetracycline | Ala-Tet, Panmycin, Sumycin |  |  |  |  |
|  |  | Tigecycline | Tigacyl |  |  |  |  |
|  |  | Tobramycin | Tobrex, Nebcin, Kitabis Pak, Tobi TOBI |  |  |  |  |