**Measures for urinary tract infection (UTI) implementation**

Measures for this project are classified into three categories.

1. **Outcome measure:** Outcome measures are measures of the performance of the system under study. They relate directly to the aim of the project. Outcome measures offer evidence that changes are having an impact at the system level.
2. **Process measure:** Process measures capture the changes your quality improvement efforts make to the inputs or steps that contribute to system outcomes. For this project, process measures are developed based on the intervention identified.
3. **Balancing measure:** To achieve an improvement in some measures while degrading performance in others is usually not acceptable. In making changes to improve outcomes, we want to be sure any related measures are maintained or improved.

**Outcome measures**

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| --- | --- | --- |
| Measure  *Name of the measure* | Formula  *How to calculate* | Definition  *Meaning of the terms used in measure and formula column* |
| Total number of urinary antibiotic prescriptions related to UTI | Count of urinary antibiotic prescriptions related to UTI per week or month | Count one prescription per UTI case |
| Total number of UTI | Count of cases UTI per week or month  UTI = met clinical signs and symptoms criteria + laboratory results within range as described in decision-support tool | UTI refers to any case that meets the clinical signs and symptoms criteria and a urine culture result within a specified range as described in the decision-support tool |

**Process measures**

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| Measure | Formula | Definition |
| Percentage of urine specimens sent to laboratory for microscopy culture and sensitivity (MC&S) testing that met criteria | Numerator: Total number of urine samples sent to laboratory for MC&S testing that met the clinical criteria of UTI  Denominator: Total number of urine samples sent to laboratory for MC&S testing  % = (total number of urine samples sent to laboratory for MC&S testing that met the clinical criteria of UTI ÷ total number of urine samples sent to laboratory for MC&S testing) × 100 | Clinical criteria refer to the signs and symptoms criteria specified in the decision-support tool for UTI |
| Percentage of urinary antibiotic prescriptions where signs and symptoms met the criteria for UTI according to the decision-support tool | Numerator: Total number of urinary antibiotic prescriptions where signs and symptoms met criteria for UTI according to the decision-support tool  Denominator: Total number of suspected UTI cases  % = (total number of urinary antibiotic prescriptions where signs and symptoms met criteria for UTI according to the decision-support tool ÷ total number of suspected UTI cases) × 100 | Count one prescription per UTI case  Here, case refers to every event of suspected UTI. This includes multiple events for the same residents, except those that reoccur within 2 weeks (unresolved UTI)  Suspected UTI refers to bacteriuria along with signs or symptoms (specific and/or non-specific) that may indicate treatment for UTI |
| Percentage of suspected UTI cases where decision-support tool was used | Numerator: Total number of suspected UTI cases where decision-support tool was used to diagnose  Denominator: Total number of suspected UTI cases  % = (total number of suspected UTI cases where decision-support tool was used to diagnose ÷ total number of suspected UTI cases) × 100 | Here, case refers to every event of suspected UTI. This includes multiple events for the same residents, except those that reoccur within 2 weeks (unresolved UTI)  Suspected UTI refers to bacteriuria along with signs or symptoms (specific and/or non-specific) that may indicate treatment for UTI |
| Percentage of suspected UTI cases where dipstick was not used to diagnose | Numerator: Total number of suspected UTI cases where dipstick was not used to diagnose  Denominator: Total number of suspected UTI cases  % = (total number of suspected UTI cases where dipstick was not used to diagnose ÷ total number of suspected UTI cases) × 100 | Here, ‘dipstick not used to diagnose’ means a dipstick was not used to rule in UTI  Suspected UTI refers to bacteriuria along with signs or symptoms (specific and/or non-specific) that may indicate treatment for UTI |
| Percentage of cases where treatment was reviewed by the prescriber after the laboratory results were available | Numerator: Total number of cases where treatment was reviewed by the prescriber after receiving the laboratory results  Denominator: Total number of suspected UTI cases where signs and symptoms met criteria for UTI and MC&S testing was requested  % = (total number of cases where treatment was reviewed by the prescriber ÷ total number of suspected UTI cases where signs and symptoms met criteria for UTI and MC&S testing was requested) × 100 | Review refers to prescriber review of therapy based on clinical response and MC&S results |
| Percentage increase in the staff antibiotic/UTI knowledge and awareness | Percentage increase = (post-education survey score − pre-education survey score)/pre-education survey score × 100 | Post-education survey refers to the survey that teams can undertake after providing the education session to relevant staff as part of the implementing phase  Pre-education survey refers to survey carried out before implementing the interventions  Refer to the AB UTI staff knowledge and confidence survey for scores |
| Total number of urine samples sent to the laboratory for suspected UTIs per week/month | Count of sample per week or month | Urine sample refers to samples sent for MC&S testing |

**Balancing measures**

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| Measure | Formula | Definition |
| Percentage of hospital emergency department presentations related to complications of UTI | Numerator: Total number of residents presented to hospital emergency department with complications related to UTI  Denominator: Total number of residents presented to hospital  = (total number of residents presented to hospital emergency department with complication related to UTI/total number of residents presented to hospital) × 100 | Residents refers to consumers living in care facilities (rest home, hospital, dementia and psychogeriatric levels of care). This excludes independent residents not assessed as requiring rest home or hospital-level care within a retirement village |

**Optional measures**

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| Measure | Formula | Definition |
| Urinary antibiotic prescriptions for UTI per 1,000 resident days | Numerator: total number of urinary antibiotic prescriptions  Denominator: total resident days  = (total number of urinary antibiotic prescriptions/total resident days) × 1,000 | Count one prescription per UTI case  Resident days refers to the number of days that each resident stayed at a home within a given month, summed across all residents |
| UTIs per 1,000 resident days | Numerator: total number of UTIs  Denominator: total resident days  = (total number of UTIs/total resident days) × 1,000 | UTI refers to any case that meets the clinical signs and symptoms criteria and a urine culture result within a specified range as described in the decision-support tool |
| Total number of MC&S laboratory testing for suspected UTI | Count of urine samples sent to the laboratory for MC&S testing for cases with suspected UTI per week or month |  |
| Time to antibiotic use from onset of symptoms | = Time from prescribing of antibiotic – when signs and symptoms were identified | Time can be calculated in hours or days |
| Number of residents where health has deteriorated as a result of waiting for MC&S laboratory results | Count of residents who are suspected of having UTI + signs and symptoms + met criteria for UTI + who are waiting for MC&S laboratory results + whose health has deteriorated | Count of residents who   * are suspected of having UTI * and signs and symptoms meet criteria for UTI * and who are waiting for MC&S laboratory results * and whose health has deteriorated |