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Can unnecessary urine cultures be decreased through electronic health record intervention?

Hypothesis: Clinical decision support and requiring selection of indication will reduce unnecessary urine cultures
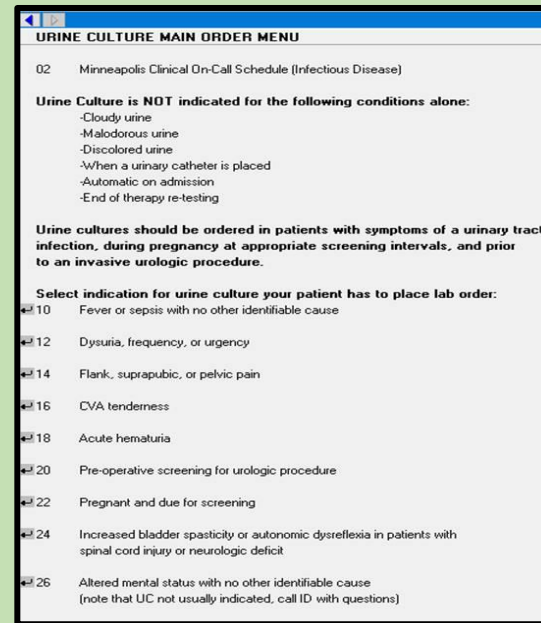
Design:

Retrospective cohort study

Population: MVAHCS - 200 bed medical center in Minneapolis, MN with 13 community-based outpatient clinics and a patient population of 88,466

Outcomes pre- and post-intervention: urine cultures, patient bed days and clinic visits

Intervention:

URINE CULTURE MAIN ORDER MENU

02   Minneapolis Clinical On-Call Schedule (Infectious Disease)

Urine Culture is NOT indicated for the following conditions alone:
-Cloudy urine
-Malodorous urine
-Discolored urine
-When a urinary catheter is placed
-Automatic on admission
-End of therapy re-testing

Urine cultures should be ordered in patients with symptoms of a urinary tract infection, during pregnancy at appropriate screening intervals, and prior to an invasive urologic procedure.

Select indication for urine culture your patient has to place lab order:
10   Fever or sepsis with no other identifiable cause
12   Dysuria, frequency, or urgency
14   Flank, suprapubic, or pelvic pain
16   CVA tenderness
18   Acute hematuria
20   Pre-operative screening for urologic procedure
22   Pregnant and due for screening
24   Increased bladder spasticity or autonomic dysreflexia in patients with spinal cord injury or neurologic deficit
26   Altered mental status with no other identifiable cause (note that UC not usually indicated, call ID with questions)

Clinical decision support menu within electronic health record

Urine culture orders routed through menu

Provider must pick from 9 indications

Results:

Average cultures per month: 765 pre intervention, 564 post intervention
26.3% reduction
($P < .001$; 2-sided t-test)

No significant difference in patient bed days and clinic visits (2-sided t-test)

Most common indications: dysuria, frequency, and urgency (44.9%), fever or sepsis (13.6%), pre-operative urologic screening (11.7%)

Conclusion:

Electronic health record intervention including clinical decision support and indication requirement was associated with significantly fewer urine cultures. Appropriate indication chosen in most post-intervention cultures suggest the decrease may be due to reducing unnecessary urine culture orders.