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Eastern Virginia Medical School Journal Club 1/25/10

P: In patients with urine cultures collected for UTI

I: Is treating based on a colony count of 100,000 cfu/mL

C: Compared with lower values

O: Associated with worse outcomes

Search strategy: Pub med search- urine culture and cfu and UTI and diagnosis, colony count, testing,

| Article | Patients | Study Type | Outcomes | Study Results | Negatives |
|---|--|---------------------------|---|--|--|
| Diagnosis of coliform infection in acutely dysuric women. Stamm et al, 1982, NEJM | 187 women with dysuria and frequency at a university student health center or local clinic | Prospective | Coliform counts in bladder vs clean catch samples | -98 women with coliform in bladder -49% had $<10^5$ cfu -30% had $<10^4$ cfu -Matched cc numbers - Sens and spec for 10^5 were 51% and 99% -Sens and spec for 10^2 were 95% and 85% | Dysuria and frequency only No demographics Small study |
| Bacteriuria in the catheterized patient: What quantitative level of bacteriuria is relevant? Stark et al. 1984. NEJM. | 110 adult patients catheterized during hospitalization Excl- long term caths, urology service, frequent UTI | Prospective | Bacteriuria counts progressing to $>10^5$ over 7 day study period | 31% with 10^5 cfu. In 24/34 of these cases, bacteriuria started at $<10^5$. 41% no growth 90% of those starting at <100 cfu and 100% of 10^2 - 10^4 had progression to 10^5 (if no abx) | 71% received abx during the study for OR proph or other infection Asymptomatic pts No follow up after cath removal |
| A reassessment of the importance of "low count" bacteriuria in young women with acute urinary symptoms. Kunin et al, | 639 nonpregnant women with or without urinary or vaginal sx at a student health center Excl- abx in past week | Prospective, case control | Bacteriuria, leukocytes in clean catch urine samples | Asymptomatic: 10^5 cfu in 3.1%, 10^2 - 10^5 in 10.2% (sim for vag cx only) Sx (urinary)- 10^5 in 32.5%, 10^2 - 10^4 in 45.8% (sim for vag/urine group) Pyuria in 77% sx All $>10^3$ achieved full | Clean catch samples No repeat cultures No treatment comparison |

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| 1993, Annals Int Med | | | | growth in 2-4 hours All > 10 ² achieved full growth in 20 hours | |
| Pyuria and bacteruria in urine specimens obtained by catheter from young children with fever. Hoberman et al. 1994. J Pediatrics | 698 febrile children age <24 months | Prospective | Bacteriuria, leukocytes in cath urine samples- comparing >50,000 to <50,000 cfu DMSA scan for pyelo | 7/109 in >50,000 group vs 36/60 in <50,000 group grew out gram pos or mixed cultures >10 leukocytes per mm3 in 93/102 pts in >50,000 group 77% of pts with >10 leuks per mm3 had DMSA + pyelo, none with <10 > 10 leuks/mm3 in 93/102 >50,000 but none of <50,000 > 10 Leuks with sens of 91% UTI | Used mm3 Arbitrary cutoff point of 50,000 Children only <2 |
| Diagnosing symptomatic urinary tract infections in infants by catheter urine culture. Cheng et al. 2005. J Pediatric Child Health | 952 children aged 1-18 mos with cath urine cultures in a pediatrics department Excl: abx, chronic cath pts | Retrospective review | Bacteria counts LE Nitrites UTI vs non Females vs uncircumcised males UTI: response to abx + fever+ LE/WBC/nit + cx | Males: 107/135 with >10 ⁵ with UTI, LR 20. 10 ⁴ -10 ⁵ LR 1.49 Females: No UTI in 383 vs 77 UTI >10 ⁵ in UTI with LR 18 10 ⁴ -10 ⁵ in UTI with LR 9 10 ³ —10 ⁴ with LR 2.5 10 ² -10 ³ LR 1.4 40 /58 cases with <10 ⁵ or mixed cx were pos for pyelo on DMSA scan | UTI definition Children only <2 |

Clinical Bottom Line: There is a paucity of well-designed diagnostic studies. From the current evidence we have, it may be prudent to lower the urine culture treatment cutoff to a value less than 10⁵. It remains unclear whether we need to treat the asymptomatic patient with culture growth or if a lower bacteria count will be more significant in vivo. In patients with values of 10² cfu/ml or higher, symptoms based treatment may be the best option- all of these patients likely need follow up after cultures grow out to determine the best course of antibiotic therapy, or if therapy is needed at that time. Further studies are needed to determine a more precise cutoff value for urinary tract infections in all populations. Many advocate withholding urine cultures in the majority of ambulatory patients with lower UTI symptoms and a positive routine U/A. It is likely that more urine cultures ordered on such patients than necessary.