



Urine Samples – Change to Culture Thresholds

The microbiology department have been looking at which urine samples should proceed to culture after microscopic examination of epithelial cell and leucocyte count. Our anecdotal feeling was that too many culture results were being released where the reported organism(s) was likely to represent contamination and thus lead to inappropriate antibiotic treatment. The overall aim of these changes is to improve the diagnostic accuracy of urine cultures and promote antibiotic stewardship.

We conducted an analysis of over 160,000 urine samples taken in the year since January 2018, and analysed uropathogen yields and likely contamination rates according to different subsets of epithelial cell and leucocyte counts in both males and females.

As a result of this analysis, from **29th April 2019**, we are implementing new culture threshold criteria as follows:

- **Urines with high numbers of epithelial cells ($\geq 100 \times 10^6/l$) will only be cultured when the leucocyte count is $\geq 200 \times 10^6/l$.** When high numbers of epithelial cells are present, the percentage of contaminated urines is very high, and the positive predictive value of a positive urine culture only becomes acceptable at this level of leucocytes.
- **Female urines will only be cultured when the leucocyte count is $\geq 50 \times 10^6/l$.** Our analysis clearly showed that the female sex is also a predictor of urine contamination, and this is independent of the epithelial cell count. At low leucocyte counts in females, the positive predictive value of positive cultures in determining genuine infection was very low and would inevitably lead to high rates of false positive cultures and inappropriate treatment.

The leucocyte threshold for culture of male urine samples will remain at $20 \times 10^6/l$ as before.

Urine samples from patients with specific clinical indications as follows will continue to be cultured irrespective of leucocyte and epithelial cell count: Pregnancy, significant immunocompromise, prior to urological surgery, less than 3 months of age.

If the urine report shows epithelial cell contamination and culture is still clinically indicated a repeat specimen should be submitted. If the urine report indicates the culture threshold has not been met as above, but you would still like the urine cultured, then please contact the laboratory within 72 hours of the sample being submitted.

If you have any questions with regards to the above, please do not hesitate to contact us.

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