subproject, a longitudinal and point prevalence study on hospital antibiotic use is being conducted in 23 countries participating in ESAC.

Our final aims in the ESAC project are not only to remove all white spots from the European map, but also to develop a standardized method for producing and analysing valid data for hospital antibiotic use.

Transparency declarations
None to declare.

References

Journal of Antimicrobial Chemotherapy
doi: 10.1093/jac/dkl1282
Advance Access publication 26 July 2006

Comment on: Urinary tract infections in general practice patients: diagnostic tests versus bacteriological culture
F. Goldstein*
Hospital Saint-Joseph, Paris, France
Keywords: UTI, dipstick, dipslide

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Sir,
The recent paper of Nys et al.1 raises several important comments. There are more than 400 papers, including ours, published in peer-reviewed journals, dealing with the evaluation of dipstick screening tests for the detection of urinary tract infections (UTIs).2–5 The results of these studies have been included in reports such as the French Consensus Conference on the diagnosis and treatment of UTI.6 The only relevant reference given by Nys et al. is a publication, in Dutch, of the ‘Guidelines of the Dutch College of General Practitioners’.

In most papers, the authors indicate in a table all the useful results for the calculation of sensitivity, specificity and predictive values according to the different chosen criteria or patient selection. One of the most important results, which is highlighted in all other studies, is the negative predictive value (NPV) of the combination nitrites (NIT) + leucocyte-esterase (LE), usually 90–98%, is missing in their results.

Nys et al. indicate a positive predictive value (PPV) of 96% for NIT alone with an NPV of 30%; this is in sharp contrast with other studies where the PPV for NIT alone is 50–75% for a bacterial cut-off \( \geq 10^5 \) cfu/mL; falling to 0% for \( 10^3 \) cfu/mL when the NPV is 80–99%.7

There are more than 20 manufacturers of dipsticks with NIT or LE alone or in combination, yielding varying results.8 The authors do not indicate which dipsticks were used or whether the reading of results was manual or automatic.

The \( 10^3 \) cfu/mL cut-off is not acceptable in routine studies without careful confirmation of the UTI. I had the pleasure and honour to discuss with E. Kass, many years ago, the results of his initial study establishing the worldwide accepted criterion of a \( \geq 10^5 \) cfu/mL cut-off.8 He fully agreed that a very small fraction of women have true UTI with \( < 10^5 \) cfu/mL, but in most cases, in the absence of leucocyturia, low counts correspond to contamination. Nys et al. do not indicate how many patients were included in the \( 10^3–10^4 \), \( 10^4–10^5 \) and \( > 10^5 \) cfu/mL bacterial range, the prevalence of LE in each group and the bacteria isolated. The authors do not indicate whether the general practitioners included diabetic patients or patients with immunodeficiency disorders, those receiving antibiotics or with indwelling catheters, usually excluded from other studies.4 It is well established that such patients may have a low bacterial and/or leucocyte count.

There are other important flaws in their study: the authors indicate that NIT and/or LE dipstick tests were performed by the general practitioners; but how many patients had both NIT + LE tests? Only 66% of the patients had an infection caused by Escherichia coli; this is 10–20% less than in most other studies with similar patients. How were the bacteria identified, since API20 was only used in case of doubt? The identification has been apparently performed on bacteria taken directly from the dipslide, without prior isolation and purity checking. Minor contaminations are extremely frequent (20–24%) in patients seen in our laboratory and such contaminations are impossible to detect on the dipslide if the bacterial count is \( > 10^5 \) cfu/mL. Moreover, during transport by post to the central laboratory, taking at least 24 h, bacteria will easily multiply and swarm during the summer months, because of the high humidity in the dipslide container,
rendering the evaluation of bacterial count and detection of contamination very hazardous. It is very likely that many bacterial counts have been overestimated. The authors apparently considered all mixed infections as contamination. It is well established that at least 5% of lower UTIs are due to two bacteria, usually two different E. coli. Symptoms of UTI can occasionally be due to another origin than infection; how many patients had a low bacterial count with a negative LE test and infection caused by enterococci?

My last comments concern the antibiotic treatment. Guidelines for the treatment of uncomplicated lower UTI are available worldwide and have been very widely accepted. Antibiotics are extremely useful for the treatment of UTI but they are completely unnecessary for patients without infections, such as 20% of these patients with a negative nitrite + LE test who were treated.

Treatment duration of 7 days instead of only one simple dose of a fluoroquinolone for a lower uncomplicated UTI is not only unnecessary for patients without infections, such as 20% of these patients with symptoms of an acute uncomplicated UTI, defined because they did not influence our conclusions.

104–105 and >10^5 cfu/mL has not been included in the paper, 2

The difference in PPV and sensitivity were shown only for the nitrite test alone and for the LE test combined with a negative nitrite.

We state that the nitrite and leucocyte-esterase (LE) test were performed by the GP, only if they were part of the GP’s care as usual of patients with UTI. As our study is concerned with the diagnostic strategy and not with the test system itself, we have not included the manufacturer’s name or how the reading of the results was performed.

The presentation of the numbers of patients with a bacteriological culture of 10^3–10^4, 10^4–10^5 and >10^5 cfu/mL has not been included in the paper, because they did not influence our conclusions.

Concerning Dr Goldstein’s comment on the exclusion of patients with a complicated UTI, we indicate in the Materials and methods section that the GPs included only (non-pregnant) female patients with symptoms of an acute uncomplicated UTI, defined by one or more of the following symptoms: dysuria, stranguria, urinary frequency and urgency, without the presence of fever.

The identification of the uropathogens found on the dipslide was performed after subculture on blood agar plates and purity checking, with standard biochemical tests indicated in the Materials and methods section of the manuscript; in case of doubt API20E or API20NE was used.

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Sir,

We would like to reply to the comments made by Dr F. Goldstein.¹

First, in the guidelines for urinary tract infections (UTIs) of the Dutch College of General Practitioners (GPs) the results of the most important studies on the evaluation of dipstick screening tests for the detection of UTIs have been included.²

Second, tables depicting the sensitivity, specificity and the predictive values for the nitrite test alone and for the combination of a negative nitrite and leucocyte-esterase (LE) test were omitted from the final manuscript as advised by the reviewers. We were interested in the additional value of the LE test for predicting a UTI in the case of a negative nitrite test result. For this reason, the PPV and sensitivity were shown only for the nitrite test alone and for the LE test combined with a negative nitrite.

Third, in the Materials and methods section of our manuscript we state that the nitrite and LE test were performed by the GP, only if they were part of the GP’s care as usual of patients with UTI. As our study is concerned with the diagnostic strategy and not with the test system itself, we have not included the manufacturer’s name or how the reading of the results was performed.

We can understand Dr Goldstein’s comment regarding the low cut-off value of 10^3 cfu/mL, which contrasts with the widely accepted cut-off value of 10^5 cfu/mL. The difference in PPV and NPV between our study and other studies probably is the result of this lower cut-off value for a positive culture used in our study. By lowering this value, more cultures were considered positive resulting in an increase in PPV and a decrease in NPV. In the last revision of the Dutch Guidelines of Urinary Tract Infections the low bacterial count of 10^2–10^4 cfu/mL in symptomatic women has been included as indicative of a UTI. Since our study considered only women with symptoms of an acute uncomplicated UTI, we used this lower cut-off value. The presentation of the numbers of patients with a bacteriological culture of 10^3–10^4, 10^4–10^5 and >10^5 cfu/mL has not been included in the paper, because they did not influence our conclusions.

Concerning Dr Goldstein’s comment on the exclusion of patients with a complicated UTI, we indicate in the Materials and methods section that the GPs included only (non-pregnant) female patients with symptoms of an acute uncomplicated UTI, defined by one or more of the following symptoms: dysuria, stranguria, urinary frequency and urgency, without the presence of fever.

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Transparency declarations

None to declare.

References


Journal of Antimicrobial Chemotherapy
Advance Access publication 30 August 2006

Urinary tract infections in general practice patients: diagnostic tests versus bacteriological culture: authors’ response

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