LETTERS TO THE EDITOR

Screening of urines with dipstrips: does it reduce workload and consumable costs?

Urine bacteriology is an important and considerable part of the work of microbiology laboratories; in ours it accounted for 47 061 specimens in 1989 of which 20–25% yielded positive cultures. Therefore, any method that reduces the number of negative specimens which are subjected to microscopical examination and culture may reduce the technical time required to produce reports and is therefore worthy of evaluation. The use of dipstrips which test for leucocyte esterase, nitrite, protein and blood have been shown to be of value in screening urines because those which are non-reactive in these tests are unlikely to contain clinically important numbers of bacteria ($\geqslant 10^5$).[1,2]

Workload evaluations using WelCan units have not been published, however, and in addition, most previous studies have taken $\geqslant 10^5$ cfu/ml to define "significant bacteriuria" while there is ample evidence to indicate that as few as 10^4 cfu/ml may be of importance.[1-4]

We tested 1991 urine specimens, 1077 submitted from general practitioners and 914 from hospital using Boehringer Mannheim Nephur + leucocyte dipstrips in parallel with conventional microscopy and culture on CLED agar. A positive dipstrip was defined as one or more of the leucocyte esterase, nitrite, blood or protein tests as positive while a positive culture was defined as $\geqslant 10^5$ cfu/ml in pure or predominant growth with no pyuria, or $\geqslant 10^4$ cfu/ml in pure or predominant growth and $\geqslant 10^5$ cfu/ml of two species with pyuria.

Of the urine samples analysed, 344 (17·3%) were culture and strip test negative; 434 (21·8%) were culture and strip test positive; 1200 (60·3%) were strip test positive and culture negative; and 13 (0·6%) were strip test negative and culture positive. The sensitivity, specificity, and predictive value of a positive and negative result were 97·2, 57·5, 27·2, and 99·2%, respectively, which is comparable with the findings of previous studies[1] and was similar for urine samples from both general practice and hospital patients. Therefore, about an 18% reduction of microscopically examined and cultured urines could be achieved if dipstrip screening was used (table). In contrast, the aggregated WelCan values[5] of the specimens would be increased by 14·3% if dipstrip screening was performed and only those that were positive were cultured as the time spent screening all urine samples was not offset by the time saved by not performing microscopical examinations and cultures on some. Similarly, the high cost of strips (12·2p per strip in this study, 25·3p list price), compared with culture (25p per CLED plate) means that insufficient medium is saved to recoup the price of strips; indeed, consumable costs may be increased by about 20% (table). One potential advantage of using dipstrips, however, is that negative urine reports can be issued on the day of receipt in the laboratory, so turn-round times may be reduced. In conclusion, the use of dipstrips to screen urine samples is not cost effective in microbiology laboratories.

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Cost and technical workload comparing culture of all specimens with dipstrip screening and culture of only dipstrip positive results

	GP (n = 1077)	*Hospital (n = 914)*	*All (n = 1991)*
Number of urines dipstrip positive	855	749	1604
Potential change in urines microscoped and cultured (%)	−17·8	−18·0	−17·9
WelCan values:			
If all urines cultured	8358	6897	15255
If strip screening then culture of positive results	9590	7851	17441
Potential change in workload (%)	+14·7	+13·8	+14·3
Consumable costs (£):			
If all urines cultured	362·50	286·50	649·00
If strip screening then culture of positive results	437·39	346·51	783·90
Potential change in consumable costs (%)	+20·7	+20·9	+20·8

Rapid identification of Klebsiella

The rapid identification of medically important bacteria means more timely and relevant results for the clinician. Several rapid methods have been developed for the presumptive identification of common organisms such as *Escherichia coli* with β-glucuronidase.[1]

We use a rapid scheme for the identification of *Klebsiella* spp isolated from urine, based on the colonial appearance on CLED agar (cystine-lactose-electrolyte deficient agar; Oxoid CM 301), results of direct antibiotic sensitivity, and rapid aesculin hydrolysis. Large, mucoid lactose-fermenting colonies that are resistant to only ampicillin and hydrolyse aesculin within two hours are reported as *Klebsiella* sp.

The conventional test for aesculin hydrolysis is an agar based medium.[2] Plates containing aesculin agar can be inoculated with up to 20 different isolates which must include positive and negative controls. Plates are inoculated by stabbing the agar and incubated at 37°C for two hours. *Klebsiella* spp produce a blackening of the medium around the stab site. As we isolate only small numbers of klebsiellae on a daily basis the use of a whole agar plate is wasteful. To reduce costs a paper strip method was developed.

The strips were prepared by soaking blotting paper strips in a mixture containing 2·0 g/l aesculin (Koch-Light laboratories Ltd, Colnbrook, Buckinghamshire, England), 1 g/l ferric citrate (Hopkins & Williams Ltd, Chadwell Heath, Essex, England), and 10 g/l peptone (Oxoid L37). The soaked strips were dried at 37°C for 30 minutes and stored at room temperature until required. The strips were stable for at least three months after manufacture. The strips are simple to use; a strip is placed in a Petri dish and a colony rubbed on the surface of the paper. Positive and negative controls are included on each strip which, after inoculation, is moistened with sterile distilled water and incubated at 37°C for two hours. *Klebsiella* spp produce blackening of the paper. In a three month parallel trial 31 isolates of *Klebsiella* sp were identified by the rapid method and there were no discrepancies between the agar and paper strip methods. The paper strip has several advantages over the agar method. It is easy to prepare and store and the cost is greatly reduced in terms of both material and staff time.

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Successful treatment of chronic immune thrombocytopenia using fresh frozen plasma

A 61 year old man presented in September 1982 with a purpuric rash. Immune thrombocytopenia was diagnosed on the basis of pronounced thrombocytopenia (platelets 15 × 10^9/l), other established criteria, and a brisk and sustained response to oral corticosteroids. The platelet response was 116 × 10^9/l on day 13, maximum level was 185 × 10^9/l in November 1984, and this was sustained at 167 × 10^9/l until April 1987.

He presented again in October 1988 for an elective hip arthroplasty for osteoarthritis. As before, no history of drug ingestion was given. A routine preoperative full blood count showed a platelet count of 53 × 10^9/l. Relapsed immune thrombocytopenia was diagnosed. The patient's blood group was A Rhesus positive and he was treated with group A fresh frozen plasma at a dose of 200 ml daily on seven consecutive days before surgery. On day 7 his direct anti-human globulin test remained negative. No other concurrent immunosuppresive treatment was given during the period documented. The operation was successfully performed with-

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