LETTERS

Note to authors of letters: Please note that all letters submitted for publication should be typed with *double spacing.* Failure to comply with this may lead to delay in publication.

Apparently 'sterile' pyuria in children

Sir,

Apparently 'sterile' pyuria — defined as the presence of more than 10 white cells μl^{-1} of uncentrifuged urine with no growth on a primary isolation medium after overnight aerobic incubation — is not an uncommon finding in children. Little attention has been paid to its significance and many laboratories no longer undertake urine microscopy, regarding culture as the only relevant test for infection. In the past, pyuria has sometimes been dismissed as a non-specific response to fevers in children. Were this so it should occur as often in boys as in girls. In this laboratory sterile pyuria was found in 194 girls and seven boys in 1988 and 290 girls and 19 boys in 1989. This suggests that it is, in fact, indicative of an inflammatory response to infection. There are three possible explanations for this. The child may have been receiving antibacterial therapy when the specimen was collected, there may be inflammatory changes in the bladder or kidneys persisting after antibacterial treatment of an infection or there may be infection with an organism which is not detected by overnight incubation on a primary isolation medium. The latter could involve the urinary tract (the only child who has developed renal failure owing to reflux nephropathy in this district during the past 12 years was infected with *Haemophilus influenzae*) or, possibly, the vulva or vagina. In none of these circumstances should the pyuria be ignored. Our practice is to request a further carefully collected fresh specimen from such children, asking for information about treatment. These specimens are cultured by methods capable of detecting fastidious organisms.[1] Some are completely negative on microscopy and culture, some yield aerobic pathogens, while others yield fastidious organisms, the nature of which suggests that a wider interest in this problem is warranted.

Between August 1988 and January 1990 inclusive we have isolated fastidious organisms from the urine of 80 children, all girls (age range two to 12 years), who presented with urinary symptoms and in whom the initial specimen showed 'sterile' pyuria. The commonest isolate was *Gardnerella vaginalis* (39); there were 27 isolates of various fastidious species of streptococci, three of *Corynebacterium* sp, two of *H influenzae* and nine isolates which did not identify on the basis of the tests used. It is recognized that fastidious streptococci may be pathogenic in damaged renal or bladder tissue.[2,3] The predominance of *G vaginalis* in this series, however, is striking. This organism is increasingly recognized as a urinary pathogen in adults. It has been demonstrated in renal and bladder urine from patients with urinary tract pathology[3] and in bladder wall biopsies from patients with the inflammatory changes of so-called 'interstitial cystitis'.[4] It is known to be present in the vaginal flora of women and sometimes in the urethral flora of adults of both sexes. Its presence, however, was not recorded in studies of the periurethral or urethral flora of pre-menarchal girls,[5,6] although in the latter study it is possible that the *Corynebacterium* sp recorded may have included it. Bartley and colleagues[7] found it in the vaginal flora of 20 girls who had been sexually abused, although they also found it in five girls in a control group of similar size. Bacteraemia with this organism has been reported in a four week old baby girl with a congenital renal tract abnormality (PHLS, Communicable Disease Surveillance Centre, unpublished report); infection in this case was presumably via the genital tract of the mother during childbirth.

The risk of urinary tract infection in children as a consequence of sexual abuse is self evident, and it is surprising that there is little published evidence on the subject. When the pathogen is a common one, such as *Escherichia coli,* there is no easy way to distinguish the small number of children who have been abused from the majority who suffer urinary tract infection as a result of the more generally recognized causes. However, the presence of a pathogen not usually associated with urinary tract infection in children, and not known to be present in their commensal flora, might be an important pointer to sexual abuse. Goldenring and colleagues[8] reported urinary tract infection owing to *Staphylococcus saprophyticus,* another pathogen usually associated with urinary tract infection in young sexually active women, in a sexually abused girl of 29 months. In three of the patients reported here from whom *G vaginalis* was isolated the general practitioner volunteered a history of known sexual abuse. To draw this conclusion in all cases would be quite unjustified but the problem certainly warrants further investigation. General practitioners should be alerted to the importance of 'sterile' pyuria and initiate appropriate investigations and referral.

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Patient self management of asthma

Sir,

Asthmatic patients need to know when to adjust their medication and how to recognize when their asthma is going out of control. The difficulty is how to convey this information clearly. Beasley and colleagues[1] developed a simple self management plan, using daily peak flow readings, for asthmatics and found that patients 'improved significantly in all objective and subjective measures of asthma severity'.

They introduced the concept of potential normal peak flow values. These values are derived from the highest consistent peak flow values achieved or the highest predicted value, whichever is the greater. Patients are given clear action guidelines, based upon a drop in peak flow from the potential normal value — 70% and 50% of the potential normal value are the two action levels for patients.

We have devised a method for doctors which simplifies the advice that they may give to patients.

1. Calculate the potential normal peak flow value from the highest consistent earlier documented peak flow rates, or the highest predicted value as described by Beasley and colleagues.[1]
2. Look at the chart (Table 1), to ascertain the corresponding 70% and 50% levels for this potential normal value.
3. Mark the patient's peak flow chart with a line at each of these levels (Figure 1).

Table 1. Peak flow action level calculator. Determine the patients potential normal peak flow level and then read off the action levels from left to right.

Peak flow values (l min^{-1})		
Predicted (or best)	70%	50%
650	455	325
.	.	.
.	.	.
.	.	.
510	357	255
500	350	250
490	343	245
.	.	.
.	.	.
.	.	.
50	35	25

The patient can then see clearly, by keeping a daily record, when their asthma is going out of control. If the peak flow rates drop below the 70% line then patients are advised to double their medication and continue at this dose until the previous potential normal values are reached. They should count the number of days it took to reach these values and then continue at the double dose for the same number of days. If the peak flow rates drop below the 50% line patients are advised to take a dose or oral steroids, double their medication and contact the doctor urgently if they are no better. If they improve on double medication they should continue as above. The steroids should be continued until the potential normal value is reached and then half the daily dose taken for the same number of days.

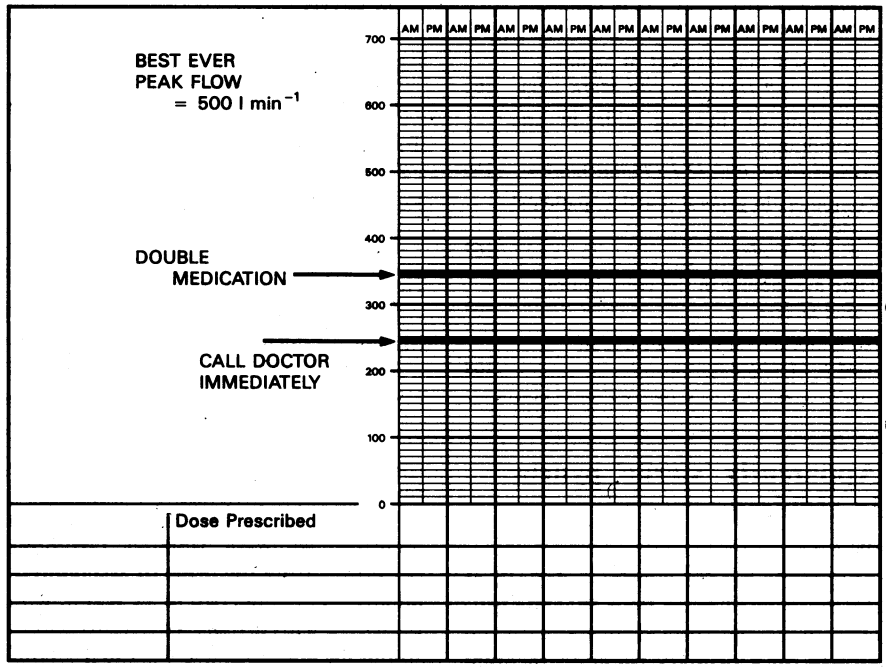

Figure 1. *A patient's peak flow chart marked with 70% and 50% levels.*

This advice can be provided in a written form or adapted by the general practitioner or practice nurse to suit the understanding of individual patients. Thus, the excellent research by Beasley and colleagues[1] can be practically applied for the benefit of patients.

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Reference

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Provision of hearing aids in the community

Sir,

Decentralization of the dispensing of hearing aids from hospital based specialist units to general practice based community sites is suggested by the Royal National Institution for the Deaf, because some hospital based services can mean lengthy delays.[1] A survey in 1984 showed that the average waiting time for an ear, nose and throat (ENT) outpatient appointment in the UK was 16 weeks, with regional variation ranging from one to 132 weeks.[2] With an estimated 3.9 million adults with hearing impairment which might be helped by an aid, and an ageing population, this demand will inevitably increase.

General practitioners' views on the proposals of the Royal National Institution for the Deaf need to be established before a community based service for the provision of hearing aids is set up. We therefore conducted a survey among general practitioners in north Kent. Questionnaires were sent to 210 general practitioners asking for their views on hearing aid dispensing by general practitioners in the community, for details of their previous ENT training and whether they would be willing to undertake further ENT training with a view to dispensing hearing aids in the community. One hundred and sixty replies were received (76% response rate).