1 Lee W, Dang CV, de Lange T, *et al.* Definition of regions in human *c-myc* involved in transformation and nuclear localisation. In: Alt FW, Harlow E, Ziff EB, eds. *Nuclear oncogenes; current communications in molecular biology.* New York: Cold Spring Habor Laboratory, 1987:179–85.
2 Evan GI, Hancock DC. Studies on the interaction of the human *c-myc* protein with cell nuclei: p62 *c-myc* as a member of a discrete subset of nuclear proteins. *Cell* 1985;**43**:253–7.
3 Loke SL, Neckers LM, Jaffe ES *et al. C-myc* protein in normal tissue—Effects of fixation on its apparent subcellular distribution. *Am J Pathol* 1988;**131**:29–37.
4 Eisenman R, Hann SR. *myc*-Encoded proteins of chicken and man. *Curr Topics Microbiol Immunol* 1984;**113**:192–7.

Drs Polacarz and Stephenson comment:

We consider the differing distribution of the *c-myc* protein p62$^{c\text{-}myc}$ in benign and malignant mucinous ovarian tumours to be of considerable importance. Of particular interest is the identification of a subset of borderline mucinous tumours that may behave aggressively, and this possibility is currently under investigation.

The authors' views concerning both mutation of p62$^{c\text{-}myc}$ in malignant neoplasms and the possible effect of fixation on subcellular distribution of the gene product are interesting and warrant further investigation. Unlike the authors, however, we have only very rarely found cytoplasmic staining in non-malignant cells and tissues which are paraffin wax embedded. This is true for normal tissues, including glandular epithelium from a variety of sites, fibroblasts, and inflammatory cells expressing the gene, and for benign neoplastic glandular epithelia. Thus in our hands cytoplasmic staining does seem to reflect a genuine perturbation of cell biology towards expression of the malignant phenotype. We thus consider the observations outlined in our paper to remain valid.

We would gladly welcome the views of other workers on this point and await further developments in this area with interest.

Dipstick urinalysis for bacteriuria

We noted the comments of Coia and Wills with interest.[1] Both they and other recent authors[2 3] seem to have assumed that significant growth on culture is the gold standard and that the dipstick is wrong if there is a discrepancy, particularly in the case of negative dipstick and positive culture. But the third and perhaps most important consideration is whether the growth has any clinical importance.

We investigated this problem last year when we examined 5834 urines for protein, blood, nitrite, leucocyte esterase and culture: 2560 (44%) were negative for all four analytes, 33 of which gave a significant growth comprising 0·6% of total specimens, but 9·0% of the 369 significant growths. These findings are similar to others.[1 3]

From the total we examined 1521 inpatient specimens in greater detail. A clinical bacteriologist visited all available patients who had a specimen with significant growth, or if this was not available, examined the clinical notes to try to determine whether the growth was clinically important. This was assessed from the history and clinical findings, especially regarding temperature, dysuria, frequency and loin or suprapubic pain. A decision could usually be made at the first visit but in a few patients repeated inquiries had to be made, especially concerning the effect of treatment on symptoms. The results are summarised in the table where positive means positive for any one of the four analytes and negative means negative for all four analytes.

Table Comparison of dipstick and significant growth with clinical importance in 1521 inpatients

	No of specimens	*Clinically important*
Significant growth + positive stick	98	51
Significant growth + negative stick	16	0
Total	114	51

The causes of this high number of significant growths with no clinical importance (63 of 114; 55%) are sometimes speculative and may vary from place to place. But in our situation, it does seem reasonable to abandon culture in specimens with negative stick results. This can be refined further. We found that the most important single dipstick result regarding a positive culture was a positive nitrite, alone, or in any combination. If nitrite was negative, then the next most important was a positive leucocyte esterase. This alone, however, was associated with an increased number of negative culture results. But if positive in the absence of nitrite positivity and in the presence of positive results in both protein and blood, then there was a closer relation between a positive dipstick result and a positive culture of clinical importance. Furthermore, if we adopted these two dipstick criteria as indications for culture: (i) positive nitrite alone or in any combination; (ii) negative nitrite but positive for leucocyte esterase blood and protein, then all of those found dipstick negative, even when yielding a sigificant growth on culture, were not found to be clinically important.

RG LOKER
HMA HUSAIN
AM RAFAY
RA TOZER
Sultanate of Oman, Ministry of Health, PO Box 393, Muscat

1 Coia JE, Wills G. Dipstick urinalysis for bacteriuria. *J Clin Pathol* 1989;**42**:444.
2 Doran HM, Kensit JG. Screening for bacteriuria with Clinitec—200. *J Clin Pathol* 1988;**44**:1127–9.
3 Brown Hazel. Chemical pre-screening of urines submitted for bacteriological analysis. *Med Lab Sci* 1988;**45**:304–7.

Dr Coia comments:

In our own study we did not attempt to evaluate the clinical importance of all our culture positive isolates. The question we wished to address was how good the semiautomated dipstick test was at predicting the presence of bacteriuria. Significant growth on culture is the accepted standard method for such detection, and as such, any novel method should be compared with it. The data presented by these authors, and in the literature cited by them, would all seem to suggest that the dipstick test is inferior in this respect.

The interpretation of the clinical importance of such bacteriuria is a separate (albeit related) issue, and the point is well made by Loker *et al* that the results of all diagnostic tests must be interpreted in the light of the clinical presentation. In this context it should be remembered that the clinical importance of bacteriuria is not dependent solely on the presence of symptoms and signs, including those mentioned by the authors. It is widely acknowledged that entirely asymptomatic bacteriuria may be clinically important in certain groups which include children and pregnant women. It is not stated in this letter whether the definition of clinical importance was extended to include such groups.

Automated measurement of plasma viscosity using the Coulter Viscometer II

With reference to the recent letter from DI Fish *et al*[1] regarding the paper by Cooke and Stuart,[2] we would like the opportunity to bring the subject up to date. Having reviewed the findings, both in the report by Cooke and Stuart and the DHSS document,[3] we found that the daily shutdown procedure has been modified to incorporate a greater concentration of sodium hypochlorite solution (4% available chlorine) and that cleaning the sample valve daily has been recommended.

The instrument software has been improved to reduce the incidence of "data scatter" messages when analysing high viscosity samples, though in the event of this message still being encountered, a second analysis of the sample is recommended. Viscosity measurements greater than 5 mPa.s are now reported by the instrument, but are flagged with an asterisk to indicate that the value is outside the linear response range of the instrument. Samples with an extreme increase in plasma viscosity—for example, in severe macroglobulinaemia—will generate the message "BLOCKAGE ? OVER-RANGE ?" which would draw the operator's attention to an unusually high plasma viscosity or fibrin clot.

We believe that these modifications afford improved instrument performance and provide added benefits to the clinician.

S DARWOOD
RW LINES
Coulter Electronics Ltd, Luton, Bedfordshire

1 Fish DI, Jackson RF, Dawson DW. Automated measurement of plasma viscosity by capillary viscometer. *J Clin Pathol* 1989;**42**:780.
2 Cooke BM, Stuart J. Automated measurement of plasma viscosity by capillary viscometer. *J Clin Pathol* 1988;**41**:1213–16.
3 Fish DI, Jackson RF, Dawson DW. *An evaluation of the Coulter Viscometer* II. London: DHSS report STD/88/14, July 1988:1–25.

CLO in Meckel's diverticula

de Cothi *et al* recently reported the presence of Campylobacter-like organisms (CLO) in four of 13 Meckel's diverticula which contained heterotopic gastric mucosa.[1] We should like to report our experience in 29 such cases which contained heterotopic mucosa and which were examined histologically in the Departments of Histopathology at the Royal Victoria Hospital and the Belfast City Hospital.

Between 1981 and 1985, 109 diverticula removed from 63 men and 46 women were

examined at the histopathology units in Belfast. The mean age of the patients at presentation was 27 years. The histological features of these cases were reviewed and heterotopic mucosa was identified in 29 of the diverticula. All 29 contained gastric mucosa, 17 contained both antral and body type mucosa, 11 contained antral mucosa only, and in one case alone body type mucosa was identified. Foci of mucosal ulceration were identified in eight cases, and eight other diverticula were inflamed—two acutely. In 13 cases the gastric mucosa showed essentially normal features. One of the cases which contained fundal mucosa also included a focus of pancreatic tissue. CLO were sought in those cases which contained heterotopic gastric mucosa using the Giemsa and cresyl violet techniques. CLO were not identified in any of the sections examined.

Morris *et al* reviewed 65 diverticula which contained gastric mucosa and identified CLO in only one diverticulum which had been removed from a 6 year old Samoan boy.[2] de Cothi *et al* found CLO in the gastric mucosa found in four diverticula, all of which showed active inflammation in the heterotopic tissue.[1] Wyatt reviewed 30 diverticula, 16 of which contained foci of gastric mucosa.[3] She found mucosa associated bacteria in nine, and in three cases these had the morphological characteristics of *Campylobacter pylori*. When she applied a polyclonal rabbit antiserum to these sections, she was unable to confirm that the bacteria were *C pylori*.

C pylori are resistant to the low pH common in the human stomach and they readily colonise human gastric mucosa.[4] In some diverticula heterotopic mucosa may cover an extensive area and may result in a low pH in the adjacent ileum. *C pylori* are much less resistant, however, than other species to bile and are found only rarely in the stomachs of patients in whom there is evidence of bile reflux.[5]

C pylori, at best, seem to be only rarely successful in colonising the heterotopic gastric mucosa present in Meckel's diverticula. This may reflect the presence of bile, to which *C pylori* are sensitive, in ileal contents.

MK HEATLEY
K ARTHUR
P MAXWELL
Department of Pathology
The Queen's University of Belfast,
Institute of Pathology,
Grosvenor Road,
Belfast BT12 6BL

1 de Cothi GA, Newbold KM, O'Connor HJ. Campylobacter-like organisms and heterotopic gastric mucosa in Meckels diverticula. *J Clin Pathol* 1989;**42**:132–4.
2 Morris A, Nicholson G, Zwi J, Vanderwee M. Campylobacter pylori infection in a Meckel's diverticulum containing gastric mucosa. In: Megraud F, Lamouliatte H, eds. *Gastroduodenal pathology and Campylobacter pylori. First Meeting of the European Campylobacter Pylori Study Group*. Bordeaux: Gist Brocades, 1988; 149.
3 Wyatt JI. Campylobacter pylori in Meckel's diverticulum. In: Megraud F, Lamouliatte H, eds. *Gastroduodenal pathology and Campylobacter pylori. First Meeting of the European Campylobacter Pylori Study Group*. Bordeaux: 1988; Gist Brocades, p 150.
4 Tompkins DS, West AP. Campylobacter pylori, acid and bile. *J Clin Pathol* 1987;**40**:1387.
5 O'Connor HJ, Wyatt JI, Dixon MF, Axon ATR. Campylobacter like organisms and reflux gastritis. *J Clin Pathol* 1986;**39**:531–4.

Dr Newbold comments:

Despite the findings of Dr Heatley *et al*, it seems clear from the three studies quoted [1-3] that curved bacilli identical with *Campylobacter pylori* can, *on occasions*, be found in heterotopic gastric mucosa in Meckel's diverticula. There is no firm evidence as yet that these represent *C pylori*, although the selectivity for gastric type mucosa and association with histological gastritis would support this contention.

I would agree with Dr Heatley *et al* that the presence of bile in the small intestine may well hinder colonisation of heterotopic mucosa by *C pylori*. Additional factors which could account for a low colonisation rate include the small size of many gastric foci and the location of the heterotopic mucosa in some instances within the submucosa of the diverticula. In these latter cases the overlying epithelium is of normal ileal type and would therefore impede or prevent colonisation by *C pylori*.

C pylori are at most only rare colonisers of Meckel's diverticula and almost certainly play little or no part in the pathogenesis of diverticulitis at this site. Confirmation of their presence in even a few cases, however, would show the ability of *C pylori* to traverse the length of the bowel while remaining viable, thus making spread from person to person by the faecal-oral route feasible.

BOOK REVIEWS

A Colour Atlas of Gynaecological Cytology. OAN Husain, E Blanche Butler. (Pp 125; £40.) Wolfe Medical Publications. 1989. ISBN 0-7234-0913-7.

The histopathologist's head has been in the sand for long enough! Final MRCPath regulations now require candidates to have spent at least three months in a diagnostic cytopathology laboratory. This, and the fact that more histopathologists are faced with cytological preparations to interpret, have renewed interest in this aspect of diagnosis. In the important and topical area of cervical disease new publications have appeared which are of considerable help.

Among them is *A Colour Atlas of Gynaecological Cytology*. This book is clinically orientated, reflecting current gynaecological use of diagnostic cytology, concentrating mainly on the appearances of cells in cervical smears. There are nine chapters and a useful reference list. Topics covered include normal cervical smears, inflammatory, reactive, and viral changes, the appearances of some contaminants, cervical intraepithelial neoplasia, and invasive cervical carcinoma. There is a useful section on endometrial cytology and a brief account of some of the appearances in samples from the vulva, vagina, and ovary.

Each of the chapters commences with a short explanatory introduction which is followed by the photomicrographs; the majority of these are clear and of adequate quality. They are accompanied by concise descriptions of the features shown. Some histological preparations are included to help explain the cytological appearances. There is an interesting final chapter entitled "problem cases" in which the authors illustrate and discuss combined lesions, discrepancies between cytological and histological material, and the presence of small abnormal cells in cervical smears.

The book is partly intended as a bench book and I think it succeeds. The sections on normal and inflammatory appearances were the most helpful. It is a visually attractive book but suffers from a common problem of atlases: the necessarily short explanations are sometimes insufficient, especially in the chapter on CIN where grading can be difficult. For this topic, newcomers to the field (and MRCPath candidates) may find more help from a longer text.

PI RICHMAN

Biopsy Pathology and Cytology of the Cervix. Biopsy Pathology Series. DV Coleman, DMD Evans. (Pp 396; £48.50.) Chapman & Hall. 1988. ISBN 0-412-25460-3.

The use of the colposcope and colposcopically directed biopsy has brought pathologists to recognise the wide range of appearances to be seen in the cervix. The cytological picture has been known for rather longer, but it is only recently that the two disciplines have been integrated in the study of the cervix. The combined approach is reflected in this book, which is one of Chapman and Hall's excellent *Biopsy Pathology* series. Professors Coleman and Evans take us through techniques for collecting and dealing with specimens and cover the normal and inflammatory pictures before going on to dysplasia and malignancy.

One might question the amount of space allotted to CIN, which is relatively brief. In particular, the section on diagnostic pitfalls, which includes such major sources of disagreement as atypical squamous metaplasia and papillomavirus infection, could profitably have been expanded to a chapter in its own right. Compared with the relatively brief overview of CIN the coverage of squamous carcinoma is almost too thorough.

The combined approach is seen at its best in the discussion of adenocarcinoma in situ and endocervical adenocarcinoma. These two chapters are outstanding, with authoritative text and apposite illustrations. There is a final chapter which gathers together a clutch of rarer tumours.

In summary, this is an excellent book for the pathologist faced with an unfamiliar or exotic lesion. It is of less value in the minutiae of the various grades and pitfalls of the CIN classification. This, the commonest cause of interobserver disagreement, still awaits a definitive text.

JENNY DYSON

Confidence Interval Analysis (CIA) (Full price £65; to educational establishments, research institutes, and the NHS £45.95.)

CIA is a menu driven, user friendly computer program designed to assist in the calculation of confidence intervals, and is specifically to be used in conjunction with the book *Statistics and Confidence*, which has been reviewed recently. The program has been produced to run on IBM compatible microcomputers and others using MS.DOS. There is a very detailed, somewhat repetitive manual, which used examples taken directly from the book.

The statistical content, data checks, numerical value restrictions, and warning messages within the program are all admirable, but the data entry and printing facilities are limited. In most instances the user may choose whether to enter raw data or summary