output would be reduced by half by using only one 24 hour collection; four 24 hour collections would still result in a weakening of a quarter. The analysis of the intersalt study was based on a single measurement with a second measure in a few subjects as a test of reliability. Although the measurement of blood pressure was carefully standardised, single values are clearly only crude estimates of blood pressure over 24 hours. The relation between sodium intake and blood pressure could therefore be much stronger than that observed. I do not believe that this is the case. The striking feature in the current controversy about salt intake and blood pressure has not been merely the difficulty in showing a relation between the two but also the difficulty in showing that salt restriction lowers blood pressure in all but a few subjects with appreciable hypertension.^{6,7} This should be contrasted with the comparative ease of detecting a relation between obesity and blood pressure or between heavy alcohol intake and blood pressure.^{8,9} Likewise, in most cases there has been no difficulty in showing that weight reduction and alcohol restriction lowers blood pressure.^{10,11}

There is a third, and most likely, explanation of the weak associations in the intersalt study: blood pressure probably has many environmental determinants, and few were measured in the study. Dietary constituents are not independent of each other. Thus the salt debate has been paralleled by a debate on the importance of low calcium intake in hypertension.¹² Weak correlations have been shown between calcium intake and blood pressure, which in some analyses disappeared entirely when confounding factors were taken into account.¹² One of the more interesting findings in recent years on the epidemiology of hypertension has been the observation that vegetarians consistently have lower blood pressures than matched controls and that a vegetarian diet will lower blood pressure in omnivores.¹³ It may be relevant that some of the sodium and blood pressure relations in the intersalt study were further weakened when alcohol intake

and body mass index were taken into account. These are the factors that are currently recognised. What of the others that we are not so certain of? Possibly the relations observed may be providing a clue to dietary factors that are more powerful determinants of blood pressure than those perceived at present.

We should guard against giving prescriptive advice based on weak epidemiological relations. Feinstein has pointed to the dangers of such activities: doctors, he warns, should not engage in an "intellectual lobotomy that equates statistical significance with biological, physiological, or quantitative importance."¹⁴ The enormous labour entailed in the intersalt study is of value only if it is seen as a fragment of a large and so far incomplete picture of environmental influences in hypertension.

J D SWALES

Professor,
Department of Medicine,
Leicester Royal Infirmary,
Leicester LE2 7LX

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Homosexuality

Compatible with full health

AIDS is not a homosexual disease, but in the Western world, and in the United States in particular, male homosexuals have borne the brunt of the epidemic. One consequence has been a vigorous reappraisal of attitudes to homosexuality. Apart from the predictably inflammatory responses of some sections of the press, we have seen both church and government grappling with the issue. The Church of England has reaffirmed that homosexual relationships are inherently immoral whether or not they manifest the virtues of love, mutual caring, and fidelity. The government, in its controversial section 28 of the Local Government Act 1988, has actively discouraged positive attitudes to homosexuality, implying that they encourage homosexual development in young people. What message should doctors be providing at this time?

Doctors have a long and dubious tradition of influencing sexual morality under the guise of medical wisdom. In the past non-procreative sex, such as masturbation, has been proscribed on the grounds of causing serious illness and even insanity. As recently as 1955 the British Medical Association, in its evidence to the Wolfenden committee on homosexuality and prostitution, offered a strong moral condemnation of homosexuality that was in striking contrast to the much more accepting attitude of the committee itself.¹ In general,

doctors have colluded with the process Barbara Wootton described as "the concept of illness expanding at the expense of the concept of moral failure."² It is questionable which label, "sickness" or "sin," does more harm to the well being of homosexuals.

Given that doctors still have considerable influence on public opinion is it reasonable to expect them to maintain a morally neutral position on such matters? Surely we should at least avoid the past errors of obscuring moral values behind pseudomedical science. At the same time there are certain issues on which we should provide an informed opinion to facilitate rational debate. Should homosexuality be regarded as an illness? Is living a homosexual lifestyle bad for your health? Is homosexual development more likely in a society that adopts positive attitudes to this sexual orientation?

Most doctors now accept that there is no rational basis for regarding homosexuality itself as an illness. A homosexual lifestyle is compatible with all the criteria of health except possibly fertility—and voluntary infertility is not regarded as an illness. Illness can be manifested as sexual behaviour, but such behaviour is more likely to be heterosexual than homosexual. On the other hand, those living a homosexual life style in our society are at greater risk of ill health.³ Apart from sexually transmitted disease, this vulnerability is pre-

dominantly a consequence of social stigma. In this respect homosexuals suffer in a similar way to other stigmatised minorities.

The determinants of sexual orientation are still obscure. There is no evidence from either primates or humans that sexual preferences are innate. Recent attempts to explain homosexual orientation as a consequence of endocrine abnormality during fetal development have not stood up to close scrutiny.^{4,6} The development of homosexuality appears to be multifactorial, with early hormonal effects possibly contributing but being neither necessary nor sufficient. As with much of human development we cannot escape the exceedingly complex interaction between nature and nurture. Social factors are likely to be important: whereas homosexual behaviour is common among other mammals, exclusive homosexual preference appears to be a uniquely human phenomenon which, according to the limited cross cultural evidence, varies in frequency from culture to culture.⁷⁻⁹ It is therefore pertinent to ask whether such homosexual preferences are more likely in a society that regards homosexuality positively. The available evidence, while not conclusive, suggests the opposite: homosexuality is more likely in those societies that strongly reinforce sex role stereotypes, where rejecting male homosexuality is linked to a need to bolster "machismo" male roles and the sexual exploitation of women by men.¹⁰

A government seeking a reduction in homosexual be-

haviour would thus be most likely to succeed by fostering sexual equality, attacking the many social expressions of sexual exploitation, and emphasising the value of sex not as a means of asserting gender or gaining status but as a binding force in loving intimate relationships. The most important benefit of such a policy might be to improve the heterosexual rather than reduce the homosexual aspects of our society.

JOHN BANCROFT

MRC Reproductive Biology Unit,
Centre for Reproductive Biology,
Edinburgh EH3 9EW

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Ultrasonography for diagnosing appendicitis

Better than other methods but not for routine use

Appendicitis is still the commonest cause of emergency abdominal surgery in the Western world,^{1,2} striking about 6% of the British population during their lifetime.³ In the past 100 years the overall mortality from appendicitis has dropped from about 26% to about 1%.^{4,8} This has been achieved with the help of antibiotics but at the cost of about 15-20% of operations being performed on people who do not have appendicitis.^{1-3,6,8-13} High resolution ultrasonography with graded compression to shift bowel gas and soft tissues improves diagnostic accuracy and deserves wider use.^{1,8-10}

Diagnosing acute appendicitis by other means is difficult. Plain radiography has an overall accuracy of only 8%.⁶ Looking for particular signs on the plain radiograph gives only slightly better accuracy: the ileal fluid level has a specificity in diagnosing appendicitis of 95% but a sensitivity of only 51%,³ and the sentinel loop a specificity of 62% with a sensitivity of 78%.³ The limitations of barium enema examination are that despite an accuracy of between 50% and 84%¹⁰ the findings are often negative even when the appendix has perforated and an abscess has formed. It is time consuming for the radiologist, uncomfortable for the patient, and entails ionising radiation. Its use cannot be advocated. Computed tomography may occasionally pick up the inflamed and the normal appendix but usually depends for diagnosis on the presence of fluid in the right lower quadrant or an abscess.¹⁰ A leucocyte count over 12 000/ml adds confidence to the clinical impression of acute appendicitis,^{6,13} but the much used leucocytosis with a shift to the left is not specific for appendicitis and may be absent.^{3,6}

About a third of all patients with acute appendicitis have atypical symptoms.^{10,12} Clinical evaluation is especially difficult in women of reproductive age because gynaecological con-

ditions may mimic acute appendicitis, and the rate of diagnostic error is twice as high in women of reproductive age as that in men.^{2,6,9,12} In an attempt to avoid missing an acute appendicitis a rate of negative appendectomy of 15-25% has been accepted. Yet the unnecessary operation has a rate of complication of up to 13%,^{2,6} close to that of an operation for a genuinely inflamed appendix.^{6,7,11} Removing a normal appendix carries a mortality of 0.65 for every 1000 operations.^{11,14} Prolonging clinical observation in an attempt to minimise unnecessary operations while avoiding appendiceal perforation may mean a delayed operation in 28% of cases and a greater risk of perforation.^{6,8}

High resolution ultrasonography with graded compression is thus potentially of enormous value but has its own limitations. Until recently it was thought that ultrasound visualisation of the inflamed appendix would be impossible because of pain and interference from loops of bowel filled with gas. This is not the case. Most operations use a 5 mHz or 7.5 mHz high resolution linear array transducer, and by exerting gentle but gradually increasing compression they achieve deep penetration with the transducer.^{1,8} Such compression has been shown on computed tomography to alter the relation of intra-abdominal organs.¹ The important criterion for diagnosing acute appendicitis is visualisation of a non-compressible appendix.⁹

The ultrasonographic appearances of acute appendicitis are characteristic: a non-compressible aperistaltic tubular structure is visualised in transverse plane as a target lesion, with a central dilated lumen that shows few echoes surrounded by an inner echogenic mucosal layer and an outer oedematous wall that shows few echoes.^{1,9} The lumen varies from 3 mm to 10 mm, appreciable dilatation being caused by pus under