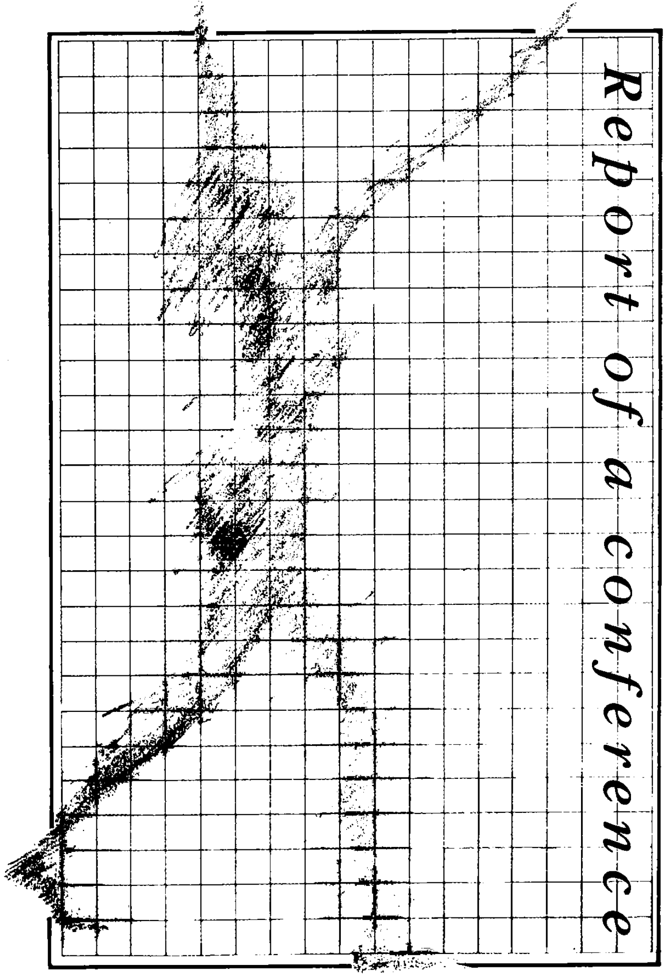
PROMOTING WOMEN'S HEALTH



Report of a conference

Compiled and edited for the Department of Health
by Dr. Pfeffer and Dr. Quick

KING EDWARD'S HOSPITAL FUND FOR LONDON

Promoting women's health

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FOREWORD

We have much to be proud of in the field of women's health in Britain.

We are the first major country to introduce full national programmes of screening for both breast and cervical cancer, free under the National Health Service. Real improvements in maternity care have brought falls in mortality among babies, while deaths in childbirth are now rare. There is increasing understanding of the misery of the menopause, and more effort now to combat osteoporosis and other problems which mainly affect women.

We were the first country in the whole United Nations to appoint a minister for women's health.

This conference on women's health sponsored by the Government, addressed some of these issues. We hoped to increase intelligent awareness among women, their families and those involved in their health care, and I believe we succeeded. I am delighted to welcome publication of the conference papers.

Edwina Currie
9 September 1989

INTRODUCTION

On 22 June 1988 the DHSS hosted a one-day conference on women's health entitled Promoting Women's Health. This volume contains the papers given by the speakers.

The conference was opened by the then Secretary of State for Social Services, the Rt Hon John Moore, and was held on the initiative of Mrs Edwina Currie, then Parliamentary Under Secretary of State for Health.

The purpose of the day was to provide a forum for dispelling the myths and correcting some of the misunderstandings surrounding women's health. The conference was attended by an invited audience composed mainly of voluntary organisations and members of the media. This was an opportunity for the audience to meet and hear from eminent speakers on a range of subjects of considerable interest to women and to those involved in promoting women's health.

The Department of Health takes this opportunity publicly to thank the speakers and those who chaired the sessions for their contributions to an interesting and stimulating day. The first session on cancers was chaired by Professor Martin Vessey, Professor of Social and Community Medicine, University of Oxford; the second session, on mental illness, by Dr Anne Bolton, formerly Consultant in Child Psychiatry, Middlesex Hospital; and the third, on the menopause and osteoporosis, by Professor David London, Honorary Professor of Medicine, University of Birmingham, and Consultant Physician, Queen Elizabeth Hospital, Birmingham.

The Department also wishes to record its gratitude to Dr Naomi Pfeffer and Dr Allison Quick who edited this excellent report on the wide range of subjects covered at the conference.

OPENING ADDRESS
BY SECRETARY OF STATE FOR SOCIAL SERVICES

Introduction

Mr Chairman, my Lords, ladies and gentlemen. It is my pleasure to welcome you to these fine surroundings and to open today's conference on Promoting Women's Health.

Only a few years ago a conference on this subject would have been unheard of. Women's health was not a subject which was widely discussed – particularly when men were present – and it attracted very little media attention. Now, however, attitudes are changing and the cloak of silence is lifting. More and more attention is being focussed on the subject. This has permitted more open discussion and has helped to release many women from the secret fears and anguish they have previously endured because of a lack of help and advice.

Today, we have a capacity audience, a platform of distinguished speakers and wide representation from the media. This is evidence that awareness has increased, that the desire to be better informed has grown and – I hope – that attitudes are being reshaped.

I should also like to suggest that no small measure of this change has been due to the drive and enthusiasm of my colleague, Edwina Currie, on whose initiative today's conference has been arranged.

One of the speakers in the excellent debate we had in the House of Commons on this subject a fortnight ago likened Mrs Currie to a missile, whizzing around and attacking all areas which particularly concern women. It was meant as a compliment and rightly so. Since joining the Department she has been at the forefront of challenging people to think harder about their own health and to consider the impact of their life-style on health. People have sat up and listened and have been encouraged to use the advice and facilities now available to them.

Screening

For our part, the Government is firmly committed to tackling women's health issues, as demonstrated by our screening programmes for breast and cervical cancer. Breast cancer is the major killer of women before their time in the United Kingdom today. Each year about 15,000 women die prematurely because of this disease and 24,000 new cases are reported. Cervical cancer claims about 2,000 lives each year.

What is crucially important is that many of these deaths could be prevented if the disease is detected and treated early. Research confirms that through the regular use of screening, conditions which might otherwise develop into cancer can be identified and treated. That is why we have placed such a high priority on introducing these cancer screening programmes in England. My Ministerial colleagues in Scotland, Wales and Northern Ireland are introducing similar programmes.

Breast cancer screening

The nationwide breast cancer screening programme is the first of its kind in the world. It is, as most of you will know, being modelled on the recommendations of a working group chaired by Professor Sir Patrick Forrest.

The Forrest report recommended that women aged between 50 and 64 should be screened by mammography every three years. Screening should also be available to older women on request. This should eventually reduce the deaths of such women from breast cancer by one-third. That is several thousand women every year. We have been asked why screening is not being made available to younger women. The reason is that the available evidence shows that mass screening for younger women would not be effective in significantly reducing mortality. The Forrest report recognised that further research was needed on this, and younger women at special risk, for example if there is a family history of breast cancer, may be offered mammography if referred by their GP. But it is worth noting that 88 per cent of all deaths from this cancer occur in women over 50.

We aim to have screening available in most parts of the United Kingdom by 1990 and everywhere in 1991. We will use the time before then to train staff and to establish back-up facilities for diagnosis, treatment, counselling and aftercare. These aspects are vital. It is not enough to establish screening centres; we must be able to follow up as quickly as possible any detected abnormalities so as to minimise anxieties whilst ensuring the maximum benefit from early treatment.

A lot is already happening. There are now 16 breast cancer screening centres in England – at least one in each regional health authority – and nearly all have started screening. We hope to announce shortly the location of the remaining centres, bringing the total number to about 100. Similar plans are progressing well in the rest of the United Kingdom.

And the response so far? Very encouraging. Some centres have reported that over 80 per cent of women have responded to their invitations and there has been widespread local interest – including media interest – in the scheme.

Cervical cancer screening

We are also encouraged by the progress of our cervical cancer screening programme. All district health authorities in England now have computerised call and recall systems. This represents an admirable achievement by all the people involved. It has meant providing 750 computer terminals, making an investment of £10 million, and transferring 35 million FPC records onto computers. As a result, all DHAs are now able to call women who have not been screened before, as well as to recall women who have been. Women aged between 20 and 64 – of whom we estimate there are 13 million – will be sent an invitation for screening over the next five years. These improvements will ensure even more systematic screening and should further increase the effectiveness of this service. And the computerisation of FPC records will enable the call and recall of women under the breast cancer screening programme to get under way quickly, once everything else is in place.

Subsequent invitations for screening will be issued at least every five years. I know that some would like to see the interval set at three years. We believe the first priority must be to bring as many women as possible into the screening programme.

After all, 94 per cent of deaths from cervical cancer occur in women aged 35 and over and the majority of women who die from the disease have never had a smear test. In these circumstances I believe we must be careful to ensure that any decision to screen at more frequent intervals is not at the expense of reaching those women who need that little bit extra by way of encouragement to take up their invitation for a test.

Smoking

As I mentioned, breast cancer is our major killer of women in middle age. In second place, but rising rapidly, is lung cancer. Last year it claimed the lives of 11,000 women. The links between smoking and both lung and cervical cancer are well documented. What is less well known is that smoking can also interfere with hormone levels and so hasten the menopause by an average of five years. Smoking is also regarded as having a role in the incidence of osteoporosis, a steady loss of calcium from bone which can lead to terrible problems in old people. I am pleased to see that all these subjects will be discussed today.

Although we are making good progress in reducing the general level of smoking in this country, we are concerned about the number of young teenagers – particularly girls – who continue to smoke. Girls in England and Wales are now twice as likely as boys to be smokers. Together with the Health Education Authority, we therefore commissioned research into why girls are smoking more than boys and which messages might be effective in encouraging them to stop.

As a result of the findings the HEA have produced proposals for a mass media and schools-based campaign aimed at making a significant impact on teenage smoking. We are currently considering their proposals.

So far I have concentrated on action taken by the Government and the NHS to fight cancer. A great deal of work is also being done by or in partnership with other organisations. I should like to pay tribute to their work and to say how pleased I am that so many of them are represented today.

An excellent example of collaboration is the involvement of the Cancer Research Campaign in the national training and education programme of the breast cancer screening service. For instance, 'Network', the newsletter of the programme, is sponsored by the CRC. We are now discussing with them the possibility of further collaboration over the production and evaluation of training and educational material for everyone involved with the breast cancer screening services, including the women invited for screening.

Osteoporosis

I mentioned osteoporosis a few moments ago. It is a condition which probably affects one woman in four, and is clearly linked to falls in hormone levels after the menopause. It is ten times commoner in women than in men.

We recently announced our first ever grant, of £20,000, to the National Osteoporosis Society, to help with their setting-up expenses. We are now considering the Society's grant application for a further £20,000 a year over the next three years as a contribution towards their continuing running costs and I hope we will be able to make a positive announcement shortly.

Conclusion

I have spoken mainly about our cancer screening programmes because I know that those are the subjects you are hearing about this morning. Cancer is a life-threatening condition and it is vital that we do all we can to reduce the number of deaths it causes. But you will be hearing this afternoon about some other important subjects. May I commend the whole of today's conference to you. It comes at a time when this country leads the world in preventive programmes to improve the health of women and I believe it will make an important contribution to influencing attitudes on women's health matters.

Breast cancer screening

DR MUIR GRAY
Training Facilitator, National Breast Screening Education Programme

This paper describes the work being undertaken to ensure that the breast cancer screening programme being introduced in this country will provide a high standard of service and make a major impact on the health of the women screened.

I will outline the objectives of the programme, how the programme will work, and briefly describe the test procedure itself before saying how we intend to achieve our objectives, in partnership with women and women's organisations.

Objectives of the programme

Obviously the overall aim of the programme is to reduce the number of women aged fifty and over who will die from breast cancer. To do this requires achieving a number of objectives. We must identify women who will benefit from screening, and ensure that a high proportion of them are offered the test and come for it. We must make sure that the screening service is acceptable to women. This means minimising the adverse effects of screening: unnecessary tests, unnecessary anxiety and unnecessary radiation. We must follow up women with abnormal mammograms and, as far as we can, provide them with effective and acceptable treatment with minimal psychological and functional side-effects.

Subsidary objectives include evaluating the service, supporting research into the many unanswered questions around screening, providing feedback to make the programme accountable to the population served and, finally, making the best possible use of resources.

Who will benefit from screening?

The key-stone of breast screening is mammography, a breast x-ray; one x-ray will be taken of each breast. Mammography is safe as the radiation is negligible.

Mammography is being offered to women over fifty. What age to start testing is, in some ways, a very difficult issue, but I find no difficulty in defending the decision to concentrate on this age group. Like all interventions, breast screening has benefits, risks and costs, both financial and social, and policy has to be based on the balance of benefits to costs. There are many women aged under fifty who have had a mammogram, and some have had a breast cancer detected. There is no doubt that extending the programme would find some cancers in women under fifty. But one also has to consider the risks to women and, as the test is not infallible, large numbers of women will have unnecessary tests and unnecessary anxiety. In my view the evidence on the balance of benefits to risks is not clear-cut, so we are keeping a very close watch on the results from some excellent services in Scandinavia and will be mounting our own research on screening in women under fifty.

Although in the first phase of the programme we will concentrate on women aged between fifty and sixty-four, women aged over sixty-four can come and have a test. We are planning some research on screening women aged over sixty-four, looking at their beliefs and attitudes, how they find the test and how they want to be involved in the screening programme.

The interval for screening tests is three-yearly. Different intervals have been suggested and it is probable that a two-year screening interval would have a greater benefit than a three-year screening interval. But we do not know how great that benefit would be, and at what cost – not just financial costs but the personal costs of unnecessary tests, interventions and anxiety. A major research project looking at different screening intervals is already underway.

Encouraging women to come for the test

Everyone registered with a GP has their name and address on a central register (run by the family practitioner committee in England and Wales). Women aged fifty to sixty-four on this register will receive regular invitations to attend for mammography. However, surveys have shown that much of the information on these registers is inaccurate, and out-of-date, and therefore women get missed. The high rate of population mobility is a major problem.

It is the patient's responsibility to ensure that any change in name or address is notified to their GP and family practitioner committee. But they are often unaware of this responsibility, and encouraging them to do this must be part of the public education programme.

We must ensure that as many as possible of the women offered the test come for it. This requires taking account of differences in language, literacy and culture. GPs could reinforce the need for screening if a woman visits them for other conditions such as a sore throat or with a sick child, and they will be told about patients who do not respond to invitation. But I think the key to success has to be community participation.

This partnership is crucial; I am in no doubt that the high response rate in areas such as Wigan and Gateshead is due to the good relationships between the health authorities, the screening services, and women's organisations with long-established traditions of being involved in the development of services. In such places women have been involved in a whole variety of different activities, including fund-raising, and they know about breast screening before the invitation comes. And our own experience in Oxfordshire has shown that a face-to-face invitation from another woman is successful in nine out of ten cases.

Minimising the adverse effects of screening

Screening is like a series of sieves that separate wheat from chaff, or large potatoes from small potatoes. When people move from one screen or sieve to the next one, there's a higher probability that they have the disease, but it is not proven. There will inevitably be some people whom screening picks out unnecessarily – the 'false-positives' – and this gives us a particular obligation to minimise anxiety, radiation and the number of unnecessary tests and operations.

Consider for a moment 1,000 women who come for screening – out of, say, 1,200 who have been invited. What happens to that 1,000?

About 900 of them will be told, 'Nothing seen, we'll write to you again in three years'. I want again to emphasise an important point; screening, being analogous to a set of sieves, is not something that's perfect; it will miss a very small proportion of cancers. We will be monitoring the number of those 'false-negative' tests but it will be very small.

One hundred women will go on for a review which will be a combination of repeat mammograms, perhaps magnification, ultra-sound (a painless technique showing whether the lump in the breast is solid, or is a cyst), aspiration cytology (the removal of a very small amount of tissue with a needle) where available, and clinical examination. The teams of women working in review centres will have plenty of time to speak with and to listen to patients. This is important because lots of other problems arise during the course of this review consultation.

About 85 of those 100 women will then be told, 'Sorry we worried you. We did try to see you within a week so you didn't have too long to be anxious, but we're now pleased to reassure you and we'll see you again in three years' time'.

The remaining 15 or so will then go on for some form of excision biopsy – that is, the lump or part of it will be taken out. The procedure will be discussed with the women at this stage, because it is an operation, and we are emphasising all the time the need for discussion at each stage in the procedure. About five, perhaps more, of the 15 who have a biopsy will have cancer. A very important issue here is that, if it is cancer, decisions about treatment will not take place while the woman is unconscious. Instead the slide will be looked at by pathologists and then there will be a discussion of the treatment options with the woman concerned.

Providing effective and acceptable treatment

Treatment must be as effective as possible while minimising psychological and functional side-effects. There is no point in recruiting people into a screening service if the treatment they get at the end has a significant negative impact on their quality of life. There are a number of different views on the question of the most appropriate types of treatment, controversies that have received some prominence in the press in the last year. In many of these treatment decisions there is no clear-cut consensus and quite often one has to put options to women, discussing with them the details of different treatments, before a decision is made.

Evaluating the programme

The service will be watched closely to see how it is running. In terms of evaluation, it is vital to have clear objectives and to collect information that will allow us to measure progress. Computer information systems have been designed that will produce the relevant data. Activities for which there is no agreed set of information, or collecting information which does not really mean anything, must be avoided. We do not want 'orphan' data, or tables produced which are not of immediate month-by-month relevance to people on the ground.

Ensuring quality of service with the resources available

How are we going to achieve the high quality of service that we are aiming for? This is a difficult task requiring the highest level of skill from a team of staff at all levels. The total population to be screened in England is four million people, clearly a huge operation. Services are being set up between now and 1990, each will probably take three years to get round their population, so it will take about five years in all to get through the first round of coverage.

The management of the programme is crucial to its success. It is vital that individuals leading the project are absolutely committed to achieving excellence by helping the staff who work with them to do so. You hear a lot in screening about computers, x-ray machines and the like, but screening services are run by people. We must recognise the problems faced by staff and the importance of their working conditions; if we can help them to achieve their full potential, they will deliver a high quality screening service.

An education programme is being planned that will be aimed at primary care teams. This will be a major challenge because throughout the country there are 40–50,000 people involved in primary care teams. A lot of our work, much of it supported by the Cancer Research Campaign, is aimed at women working within those teams: receptionists, practice nurses and practice managers. In cervical screening programmes there has been a very high level of commitment from those women, so we see their enthusiasm and support as very valuable. They will have an important role in linking with local women's organisations whose active involvement is essential to the success of the campaign.

In many cases the service will be organised around mobile screening units. Before the unit comes to town, or even to a district in a large city, links will be made with local women's organisations. The primary care teams will be closely involved, particularly GPs because they are clinically responsible for the health of the women on their list.

The third group who will be involved are staff working in screening units: radiographers, radiologists and, at the follow-up stage, nurses, who will play a very important part in counselling and discussing options with women. Pathologists and surgeons will also be involved in the training programme.

Prospects of success

These are fine words! But can we achieve what I have set out? I am sure we can. Some people have looked at the problems in cervical screening and suggested that similar problems will make introducing breast screening programmes difficult. But I think there are a number of reasons why breast screening will prove easier than cervical screening.

Firstly, the disease is changing in cervical screening – we are trying to hit a moving target, and are not quite clear how fast it is moving.

Secondly, the model for breast screening was worked out by the Forrest committee; we have – one might say – a pattern, knitting needles and some balls of wool and what we have to do now is the knitting. In cervical screening, we now know what we want to achieve, but we have got to unravel much of what we have done, knit it again, and carry on wearing it at the same time! And that is a much more difficult task. I think it is important that confidence in the breast screening programme should not be undermined by criticism of the cervical screening programme, which anyway, incidentally, is being greatly improved.

In short, although breast screening presents a daunting challenge it is perhaps less difficult than cervical screening, and I feel confident that we will succeed. When I say 'we', I mean not only those professionally involved in the screening programme, but local and national voluntary groups as well. The Cancer Research Campaign and the Imperial Cancer Research Fund are funding newsletters – 'Network' on breast screening and 'Links' on cervical screening – which are available to such groups and we hope for widespread involvement.

I would not deny that the work is very difficult and very demanding. But it is also extremely exciting and challenging, and by working in partnership and by not being afraid to face up to some of the fundamental issues involved I am confident that we can develop a highly effective and efficient screening service for the women of this country.

The Finnish experience of cervical cancer screening

DR LIISA ELOVAINIO
Secretary General of the Cancer Society of Finland

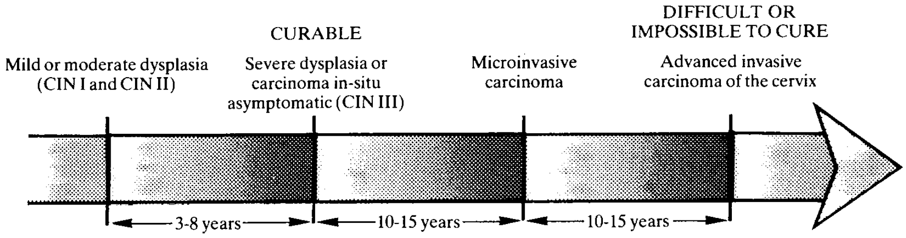
Screening for cancer of the cervix has a long and reliable history which started in the 1940s. It uses the pap smear, a quick, painless, accurate and cost-effective technique which carries no risk to women. Finland, where a nationwide screening programme for cancer of the cervix was introduced during the mid-1960s, provides convincing support for the effectiveness of a well-organised service.

This paper looks at why screening for cancer of the cervix is an effective preventative health measure, who should be screened, the ways in which screening is offered in different developed countries and the effectiveness of these different programmes.

Why screen for cancer of the cervix

The purpose of screening is the detection and treatment of the disease in its early curable stages and to prevent it from progressing into a life-threatening illness.

Figure 1 A typical sequence of events in the natural history of cancer of the cervix



Cancer of the cervix starts with a pre-invasive and very curable stage known as dysplasia. The next stage is carcinoma-in-situ. At both of these early stages the disease can be detected and treated. The disease progresses very slowly over a period of years before it reaches an invasive stage when the cancer is difficult or impossible to cure.

Who gets screened?

In Finland all women aged 30 to 60 are invited for screening every five years. By screening women every five years, Finland has an 84 per cent protection rate against cancer of the cervix. Screening more often is much more expensive and increases this rate by only five per cent. The Nordic Cancer Registers which monitor the statistics from all the Nordic countries have suggested that the efficacy of an established programme is more effectively improved by concentrating on attendance rates or reducing the time interval between screening rather than by concentrating efforts on high-risk groups. But our research suggests that it may be wise to screen one high-risk group: women who report abnormal bleeding but who have a normal smear test and those who have a very slightly abnormal test. Testing these women the following year has shown that they have a three-fold risk of cancer.

Scandinavian figures contradict the widespread belief that there is an epidemic of cervical cancer due to sexually transmitted viral infections. Our long-term trends have not changed during the 1980s and the disease has not become more frequent in the younger age group where one would expect such an epidemic to appear first. But continued careful monitoring is needed to clarify these points.

How are screening programmes organised?

A screening programme must be carefully planned if it is to reach all women at risk. An expert group of the International Union Against Cancer recently outlined the necessary elements of effective cervical cancer screening: it must identify both the target population and also individual women, and must achieve a high coverage and attendance rate. Personal letters of invitation should be sent, and women informed of the results, including negative results. Adequate field facilities for taking smears and examining them, with proper quality control are necessary. There must be a carefully designed referral system to adequate treatment facilities.

In Europe the number of women screened and the organisation of screening programmes for cervical cancer vary from country to country. In most countries there is no organised screening programme. Instead, pap smears are taken when women encounter the general health care system. In Finland, routine pap smears are taken at screening centres by nurses or midwives. These nurses, who do little else but take pap smears, are trained to take them properly by the laboratories which process the smears. If too many badly taken smears come from the same centre, then the nurses are invited by the laboratory for one week of practical retraining. Once a year, everyone receives a refresher lecture. Gynaecologists who take pap smears in their own practices are similarly trained.

The smears are processed at the 11 laboratories run by the Cancer Society of Finland. The technicians at these laboratories received six to eight weeks of additional training in cervical cytology. They also carry out other laboratory tests, for example, for cancer of the breast. The technicians read about 6,000 to 8,000 smears each year. To ensure quality control, one in ten of the normal pap smears (Papanicolaou Classification I) is checked routinely by a doctor who also examines all those which look abnormal (Classes II to V).

Effectiveness of screening

Non-organised screening has some effect. It has been estimated that, for example, in England and Wales during the 20 to 25 years before screening was organised, the prevention rate was up to 25 per cent. The prevention rate may have been around one per cent per year. But in countries with well-organised programmes, the prevention rate is much higher. Figure 2 shows the results of the well-organised screening programme in Finland.

Figure 2 Incidence and mortality rates of cancer of the cervix in Finland

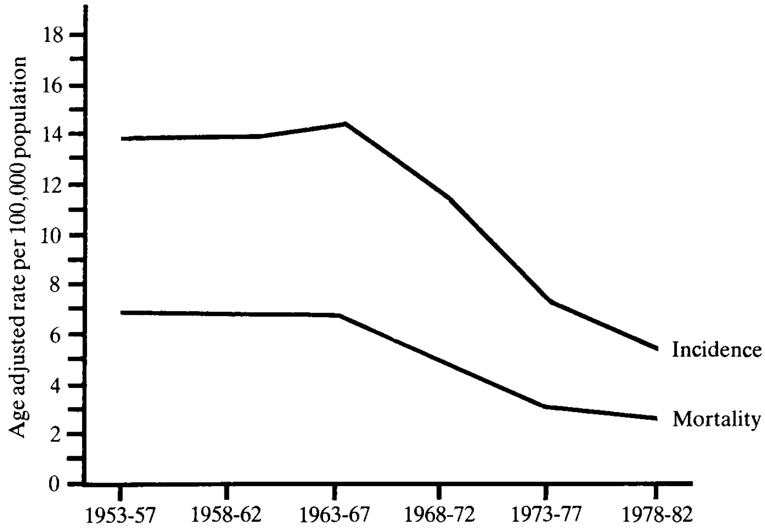
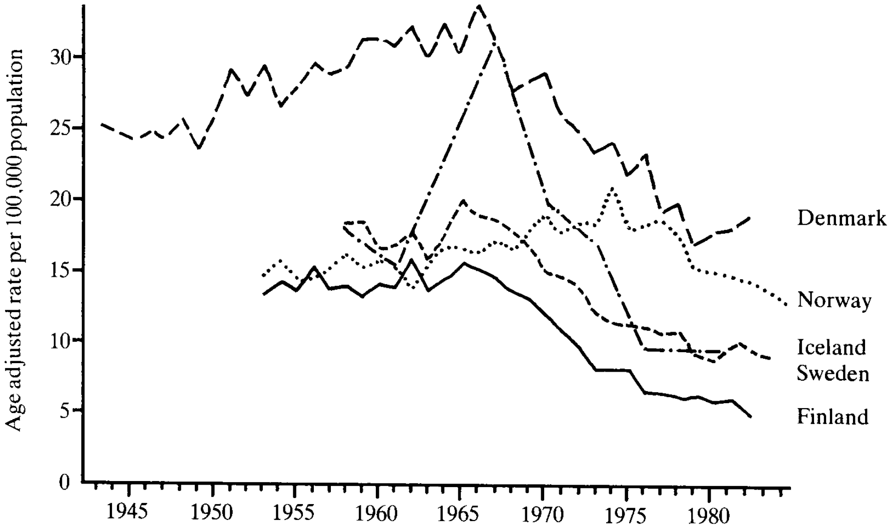


Figure 2 shows a dramatic fall of 60 per cent in the rate of women getting and dying from cancer of the cervix after the programme was introduced in the mid-1960s.

The numbers of new cancers reflect the differences in screening methods. Denmark and Norway do not screen a very high proportion of women; in contrast, in Iceland and Finland, all women in the age groups at risk are screened. Where there is less coverage, the pre-invasive early stages of the cancer are not dealt with and have time to develop. But in those countries where screening is really covering the population, fewer women get cancer and fewer die from it.

Figure 3 Incidence of cervical cancer in five Nordic countries



The key to reducing the incidence of cancer of the cervix lies in providing an organised service which covers the population at risk completely. For instance, it is known that in England and Wales the majority of patients with cancer of the cervix have not had a previous negative smear. We also know that where there is no organised screening service, older women are less likely to be tested than young women and that most pap smears are taken from women of higher social class. Estimates from England and Wales suggest that over half of all pap smears are taken from women under 35 years of age, where only 15 per cent of cancers occur. Far fewer pap smears are taken from women aged over 35 among whom 85 per cent of cervical cancers occur.

The programmes that have proved most successful are those that have made a positive effort to recruit women, particularly those aged over 40 who are at most risk. Resources for the development of screening should be put primarily into methods for reaching these women. I am delighted to see that this is now happening in Britain.

Conclusion

Cervical cancer screening is supported by all the large international health programmes; it is mentioned, for instance, in 'Health for All by the Year 2000' and also in the European Community cancer programme. In England and Wales 2,000 women die from cervical cancer each year. It is always hard to prioritise what to do in health care. So public participation is needed to help health officials and decision-makers to make choices about health promotion measures.

Based on the Finnish experience, we estimate that half of the 2,000 cervical cancer deaths that occur annually in England and Wales will be prevented by the introduction of an organised screening programme. Again, based on the Finnish experience, we estimate that 18,000 years of life are lost due to cervical cancer. The decision to start a nationwide computerised screening programme means that half of these years of life, amounting to 9,000 years, will be saved.

Women and smoking

DR ANNE CHARLTON

Director, Cancer Research Campaign Educational and
Child Studies Research Group

Lung cancer requires a very different approach from breast or cervical cancer. While there is at present no prospect of a screening system, we do know a lot about prevention.

This paper looks briefly at four topics: firstly, the present pattern of smoking amongst women; secondly, what harm women do to themselves by smoking; thirdly, the effects of smoking on their children; and fourthly, some of the reasons why women smoke. Throughout the paper I have highlighted, where relevant, ways of discouraging smoking.

Women's smoking patterns

Women have been smoking for very many years. They started, probably in prehistoric times, when its narcotic and stimulant properties were valued in medicine and magic. Magic is still a relevant theme today.

In Elizabethan times it was largely men who smoked. Moll Cutpurse, a notorious robber, smoked as well as wearing men's clothes in order to declare her equality with men. In the eighteenth century snuff replaced smoking in fashionable quarters, but by the mid-nineteenth century, cigars and pipes were beginning to become stylish. Smoking was seen as risqué for women, but by the 1930s it had become a fashion accessory. Not many women were smoking at this time, but the Second World War brought a tremendous increase. Women began to smoke because they were under a lot of stress, which perhaps has lessons for us today.

Soon after the war the connection between smoking and lung cancer was established by Sir Richard Doll and his colleagues. The resulting publicity triggered many people into stopping smoking.

Table 1 Cigarette smoking among adults aged 16 years and over in Great Britain: 1972 to 1986 (percentages)

	1972	1974	1976	1978	1980	1982	1984	1986
Men	52	51	46	45	42	38	36	35
Women	41	41	38	37	37	33	32	31

As these figures indicate, men have been more successful than women at giving up smoking. Between 1972 and 1986 men's smoking prevalence has fallen by 17 per cent, but among women the drop is only 10 per cent.

These figures are somewhat misleading, however, because a lot of men who appear to have given up smoking have in fact switched to smoking pipes and cigars and do not then show up on cigarette smoking data. One of my own studies, of teachers, clearly illustrates the danger of looking only at cigarettes. Only 10 per cent of the men and 19 per cent of the women smoked cigarettes exclusively. But of the men another seven per cent smoked cigarettes and pipes and a further 14 per cent smoked but did not smoke cigarettes at all. Our efforts to help women give up smoking must aim to discourage them from switching to smoking something else, or chewing or snuffing tobacco.

Despite the encouraging fall, cigarette smoking among adults is still very high. In 1986 in England, Wales and Scotland, 35 per cent of the men and 31 per cent of the women smoked. Figures are similar for Northern Ireland, while for Scotland on its own, the figures are 43 per cent and 35 per cent.

When we look at women's smoking broken down by age a very worrying trend appears.

Table 2 Women's cigarette smoking by age (percentages)

	16–19	20–24	25–34	35–49	50–59	60+
Great Britain (1986)	30	38	35	34	35	22
Great Britain (1984)	32	36	36	36	39	23
Scotland (1984)	35	43	45	40	33	25
Northern Ireland (1984)	17	33	40	34	33	17

It is alarming to see that is largely the younger women who smoke, and that smoking amongst 20–24 year olds actually increased by two per cent between 1984 and 1986. One possible, if gruesome, explanation for this is that a high percentage of smokers die before they reach the older age groups. This could very well be the case.

At what age does smoking start? My own research, based on a survey of over 15,000 children in the North of England, found that 29 per cent tried their first cigarette between nine and twelve years old. One per cent had tried a cigarette by the time they were four years old. This startling finding is probably true; in smoking households the mother puts her cigarette down on a low coffee table, the toddler comes along, picks it up and has a puff. But if children reach the age of sixteen without trying a cigarette, they become increasingly unlikely to do so. At the time of responding to the question, 45 per cent of these eight to nineteen year olds had never tried a cigarette.

Table 3 Age at which eight to nineteen year olds claimed to have tried first cigarette

Age	per cent
Under 5	1
5–6	3
7–8	9
9–10	14
11–12	15
13–14	9
15–16	2
17–18	0.03

A recent OPCS national survey has shown that regular smoking becomes established round about the second year at secondary school, which is the twelve to thirteen age group. At this age two per cent of both boys and girls smoke at least one cigarette a week. This rises steadily, so by the fifth form, at the time they are leaving school, 19 per cent of the boys and 30 per cent of the girls are regular smokers. The same study has shown that whilst amongst boys in the eleven to sixteen age group smoking has fallen from 13 per cent to seven per cent between 1984 and 1986, for girls it has only decreased from 13 per cent to 12 per cent.

At sixteen most children leave school and go either to further education colleges or into employment or unemployment. On the whole those who stay on at school are not the smokers. It is more common amongst school leavers. Another study of my own found striking sex differences in the smoking patterns of further education students between sixteen and twenty. More girls smoke, but they are much more likely than boys to be occasional smokers. Boys are more likely to be regular smokers. These very different smoking patterns need to be borne in mind in our work. Furthermore,

Table 4 Smoking habits of 433 further education students in England and Wales 1981 (percentages)

	Age				
	16	17	18	19	20+
Non-smokers	67.8	66.5	69.6	60.9	61.3
Occasional	11.9	11.6	4.3	4.3	0
1–4 per day	5.1	3.3	4.3	4.3	6.4
5–9 per day	6.8	5.6	2.2	8.7	0
10–14 per day	4.2	8.8	6.5	8.7	9.7
15–19 per day	4.2	3.3	4.3	8.7	9.7
20+ per day	0	0.9	8.7	4.3	12.9

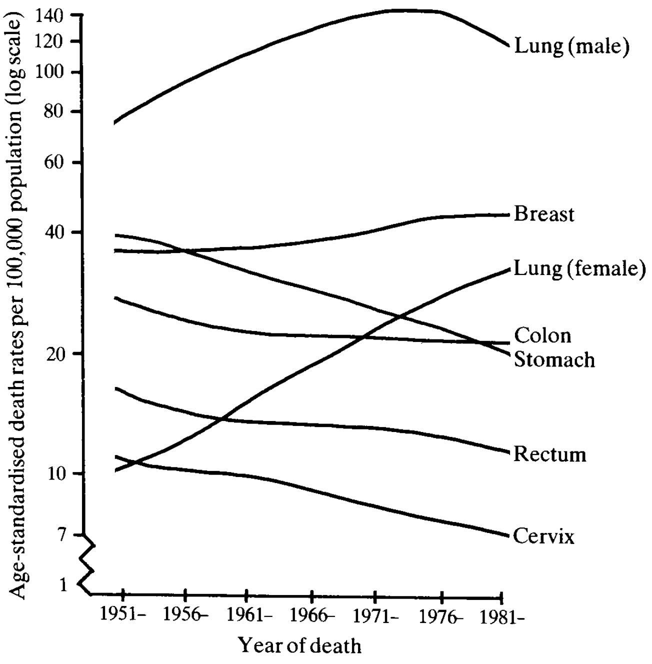
as Table 4 shows, there is a substantial change in smoking patterns while students are at college. At sixteen there are many occasional smokers, but by twenty they have all become regular smokers. So this is a critical age in setting lifetime smoking habits.

In this study we also looked at which students smoked. Only slightly over 20 per cent of the engineering and catering students, but almost half of the hairdressing students and 42 per cent of the pre-nursing students smoked. This last result is particularly interesting; the high level of smoking amongst nurses is well-known and often put down to stress, but these were students who had not yet even reached the ward.

The effect of smoking on women's health

Lung cancer at present has a very low chance of cure. Of those cases which are discovered early, only about one in five will survive for five years. Late cases, which most are by the time they are diagnosed, are almost all fatal after a distressing illness.

Figure 4 Age-standardised mortality rates, 1951–85 England and Wales



Lung cancer does not strike a person down as they light their first cigarette. It only appears ten or twenty years later. This gives a false sense of security and an attitude of 'It can't happen to me, and if it does I'll be too old to care anyway'. But it can and does. It is sometimes thought of as a disease only of men and of old people. But it is a disease which affects young and old, men and women, about ten to twenty years after starting smoking. As Doll and Peto pointed out, the younger people start smoking, the greater their risk of contracting lung cancer.

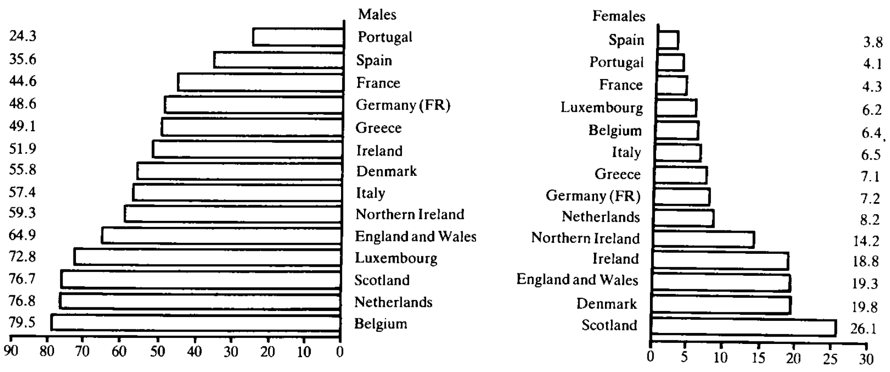
In 1986, 10,000 women in England and Wales died of a lung cancer, a rare disease in the absence of smoking. To give an idea of the steady increase in this disease amongst women in recent years, 8,400 (3,000 of them under the age of sixty-five) died of lung cancer in 1980, whilst the toll of lung cancer among women in 1974 was 7,500.

This death toll is the equivalent of all the women in a small town the size of Buxton, Bushey or Abingdon being wiped out in a single year. Many thousands more deaths are caused by heart diseases and respiratory diseases related to smoking. Lung cancer is only one fatal consequence of smoking.

Although there are still more deaths from lung cancer among men than women, the rate among women is still rising dramatically whilst that for men has passed its peak, as Figure 4 indicates.

In Scotland the situation is even more depressing. In 1986 lung cancer overtook breast cancer as the major killer among women. Scotland also has the dubious honour of

Figure 5 Age-standardised death rates from lung cancer, 1985
(Rates expressed per 100,000 population)



having the highest lung cancer rate among women in the whole of Europe, which fits with the high smoking rates for Scottish women that we noticed earlier.

Effects of smoking on children

Women may damage their children's health as well as their own by smoking, both by the physical effects of passive smoking and by their own example, encouraging their children to smoke.

The dangers of smoking in pregnancy are well known. A classic study carried out in 1972 showed that the more cigarettes smoked daily in pregnancy after the fourth month, the lower the birth weight of the baby and the greater the risk of perinatal deaths. The neonatal death rate was up to nine per 1,000 more in smoking mothers than in non-smoking mothers. This message is not always easy to put over to young women. They associate a lighter baby with an easier birth, and do not realise that low birthweight babies are more vulnerable to disease, grow less well, and are more likely to be ill or die. In fact rates of miscarriage, stillbirth, neonatal and perinatal death of babies of smoking mothers are all alarmingly high: furthermore, when mothers smoke in pregnancy the subequent growth and development of the child can also be impaired.

Many mothers do succeed in stopping smoking during pregnancy. But, as health visitors and nurses know all too well, many take it up again almost before the baby's first cry. They are often unaware of the continuing effect of their smoking on their child. The efforts of midwives at antenatal clinics to encourage women to stop smoking should be continued by health visitors after the birth.

Breast feeding has many benefits for the baby, but if a mother smokes at the same time research has shown high levels of nicotine products, for example cotinine, in the breast milk and in the baby's body fluids. Parental smoking, especially that of the mother, increases the risk of many respiratory problems and illnesses in children. These include asthma, wheezing, bronchitis, pneumonia, middle ear problems and sore throats. My own research has shown an increased risk of coughs in children aged between eight and eighteen with smoking parents. When mothers buy cough mixtures for their children, they could usefully be encouraged by the pharmacist to give up smoking. There is also new evidence that children exposed to passive smoking are more at risk of lung cancer in adult life.

Mothers influence their children's smoking. If baby always sees mother smoking, then this becomes the norm. The smell of smoke becomes a security symbol to her

Table 5 Children smoking related to parental smoking

Parental smoking	Children smoking		
	Regular	Triers	Never
Neither	9	40	51
Father	14	46	43
Mother	15	45	43
Both	18	40	42

children. So it is not surprising that smoking mothers, even more than smoking fathers, influence their children to smoke, as Table 5 indicates.

It is not only parental example but also parental attitudes that influence children's smoking habits. If the mother is perceived as disapproving, children are seven times less likely to be regular smokers than if she approves. Once again mother has more influence than father.

Table 6 Children smoking related to parental approval

Parental approval	Children smoking		
	Regular	Triers	Never
Father approves	41	35	24
Father disapproves	8	41	51
Mother approves	48	33	19
Mother disapproves	7	42	51

Why do women smoke?

My own recent research has revealed a marked difference between the factors that influence smoking in girls and boys aged twelve and thirteen. For girls, the most significant factors, in order of importance, were: parental smoking; positive views on the effects of smoking (for example that it will calm nerves, look grown-up, give confidence and control weight); awareness of cigarette brands; and best friend smoking. For boys no factor was consistently significant but best friend smoking was the most related, and positive beliefs the least related, of any influence analysed.

These findings show that we must address ourselves to getting rid of the positive views about smoking held by girls. Concentrating on the health risks is inadequate. Girls need more than the correct facts, they need to have the correct beliefs and the correct decision-making skills too.

Dr Anne Charlton

Recent research carried out for the OPCS suggests that women smoke for 'affect control'. Smokers are more likely to suffer from stress and to feel dissatisfied with, and out of control of, their lives. Smoking was perceived as a means of controlling stress and as providing other positive benefits.

A recent study of my own, comparing single mothers and those with partners, also suggests that stress is an important reason for smoking. In an urban environment, 47 per cent of mothers with partners smoke, but this shoots up to 58 per cent for single mothers. The difference is even more striking in a suburban or rural setting. Of those with a partner, 35 per cent smoke, compared with 53 per cent of single mothers. The finding suggests that women whose lives are difficult, perhaps because of poverty, lone parenthood or stressful jobs, are more likely to smoke as a means of escape. Other research confirms my own findings that smoking is related to the stress associated with poverty, unemployment and bad housing.

Advertising presents a children's story-book message to women: smoking takes away your fears and stress and moves you into a magic world. Children too understand this message; if they had a favourite cigarette advertisement 32 per cent of nine and ten year old girls who had never smoked believed that smoking calmed your nerves. Of those who did not name a favourite only 16 per cent believed it.

Europe Against Cancer Year takes place in 1989. It is a time when all organisations, publications and broadcast media should take some special action. I suggest that we concentrate on reducing lung cancer among women. We must develop exciting and original initiatives aimed at reducing smoking in women. Women's lives are the prize.

Women and mental illness

DR RACHEL JENKINS
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Women report more symptoms of both physical and mental illness and make more use of doctors and hospital services than men. This paper focusses on mental illness and explores the reasons for this phenomenon both from a historical perspective and through an examination of the current explanations and statistical evidence; finally, it suggests some approaches to prevention.

The historical perspective

Sex differences in morbidity and mortality have attracted considerable attention for several centuries. In the seventeenth century Graunt, the founder of modern demography, noted that while women attend doctors more frequently than men, their life expectancy was no less than that of men. Graunt concluded that either women were genuinely cured by their physicians or that the men suffered from untreated morbidity. This paradox between apparent morbidity and actual mortality still exists today, as Table 7 demonstrates.

Table 7 Life expectancy and use of doctors and hospital services for both mental and physical illness

	Men	Women
Life expectancy: years at age 0 in England and Wales, 1983-5	71.8	77.6 years
Hospital discharges: rates per 1,000 in England and Wales, 1985	101	110
Use of outpatients: rates per 1,000 in Great Britain, 1984	130	130
Visits to a GP: rates per 1,000 in Great Britain, 1984	110	150
Percentage of people consulting a doctor in the last 14 days who obtained a prescription in Great Britain, 1984	74	74

A contemporary of Graunt, the physician Richard Napier, observed from his patients' records that there were almost twice as many cases of mental disorder among his female patients as among male patients. Women's higher rate of mental disorder was, he concluded, due to the social stresses of marriage and motherhood because, whatever their social class, women complained of stress and unhappiness in marriage and expressed anxiety over their children more than did men.

In contrast to Napier's findings, before the middle of the nineteenth century hospital records showed that men were far more likely to be confined as insane than women. For example, in 1845 John Thurnham, the Medical Superintendent of the York Retreat, observed that male asylum patients outnumbered women by about 30 per cent. But gradually during the Victorian era the proportion of women in asylums increased, so that by the 1850s more women than men were found in public institutions. According to the 1871 census, the sex ratio in public asylums was 1.2 women to one man. Men still predominated in the private asylums for the middle- and upper-class patients. But by the 1890s, the predominance of women had spread to all institutions except asylums for the criminally insane, military hospitals, and what were called 'idiot schools'. This remains true today.

In her book *The Female Malady: Women, Madness and English Culture, 1830-1980,* Elaine Showalter described the two lay images of female insanity articulated by Victorians. The first viewed madness as one of the wrongs of women; it is epitomised in the novel, *Maria, or The Wrongs of Women,* in which Mary Wollstonecraft describes a woman who is forced into an asylum by her husband so that he can pursue his mistresses with her money. Here the asylum symbolises all those man-made institutions, ranging from marriage to the law, which restricted women and drove them mad.

The second view was that madness is almost synonymous with feminine nature and that it was appropriately looked after by scientific male rationality. This viewpoint is exemplified by Robert Fleury's painting commemorating Pinel's removal of the chains of 'lunatics' at the Bicetre and Salpetriere asylums. Despite the fact that many of the enchained lunatics were actually men, Fleury's picture depicts only women.

Nineteenth century doctors discussed the reasons for the apparent sex difference in mental illness. Some doctors took the view that the larger number of women in asylums did not prove that the incidence of mental disease was actually higher in women, but rather reflected the greater longevity of women patients who were also less likely to be discharged. Other doctors claimed that poverty explained the predominance of women in asylums: poverty, one of the so-called 'moral' causes of insanity, affected more women than men and poor people were more likely to be committed to institutions than people from the middle or upper classes.

Of course, poverty also causes malnutrition and anaemia, predisposing sufferers to infections and degenerative disorders which are associated with psychological disturbance. Not all women in asylums were insane; many suffered from senile dementia, TB, epilepsy, mental retardation and other handicaps, were unable to care for themselves and were neglected because provision within the family or the community at large did not exist for them.

Most Victorian physicians, however, believed that women were more prone to mental illness than men because the instability of their reproductive systems interfered with their sexual, emotional and rational control. Women were seen to be the products and the prisoners of their reproductive systems. The female sex, as one physician explained in 1827, is far more sensitive and susceptible than the male, and extremely liable to those distressing afflictions which, for want of some better term, have been determined 'nervous' and which consist chiefly in painful afflictions of the head, heart and, indeed, of almost every part of the system.

Theories of female insanity were specifically linked to the biological milestones of the female life cycle (puberty, pregnancy, childbirth and menopause) during which the mind would be weakened and the symptoms of insanity would emerge. In 1871, a

Table 8 A comparison by sex of rates (per 100,000 population) of treated psychiatric illness in England and Wales

	Episodes recorded by a GPs		Admissions to psychiatric hospital	
	Men	Women	Men	Women
All mental disorders	5,540	11,270	330	451
Schizophrenia and paranoid states	170	210	60	58
Affective psychosis and other psychosis	200	380	56	102
Psychoneuroses	3,210	8,390	25	51
Personality disorders and sexual deviation	260	250	29	33
Senile dementia	10	30	27	46
Organic psychosis	10	10	2	1
Alcoholism and drug dependency	260	140	17	41
Mental retardation	40	40	1	1
Other conditions	1,750	3,450	1	1

Victorian doctor claimed that 'the sympathetic connection existing between the brain and the uterus is plainly seen by the most casual observer.'

Contemporary explanations and evidence

The Victorian debate closely shadows the questions asked today: is the apparent excess of women's mental illness an artefact, that is, a myth created by the statistics; is it due to social and environmental pressures, or is it inherent in biology, closely linked to women's reproductive systems?

The statistics consistently reveal that more women are treated for mental illness than men. Mental illnesses are classified into four groups: first, the psychoses, or major psychiatric morbidity; second, the neuroses, or minor psychiatric morbidity; third, the personality disorders; and fourth, organic brain syndromes, which include senile dementia, psychological aspects of physical disease, alcoholism, drug dependence, and mental retardation.

How persistent and severe are these different disorders and how many people in the community do they affect? Psychoses are relatively rare – only about two per cent of the adult population are sufferers. No one knows how common personality disorders are. Their prevalence would depend on the strictness of criteria used to define this disorder. In general practice, personality disorders form less than one per cent of recorded episode rates.

Of the organic brain syndromes, mental retardation occurs in rather less than one per cent of the adult general population and senile dementia occurs in about four per cent of the general population over sixty-five; but most of these are aged over eighty and it is extremely rare in adults under sixty-five. The prevalence of alcohol abuse depends on the definition employed, but most authorities agree that in the UK at least one per cent of the adult population is alcoholic and the numbers are rising. The prevalence of lesser degrees of alcohol abuse is clearly much higher.

The neuroses – hypochondria, depressions and anxiety states – are much more common: about 10 to 25 per cent of the adult general population are sufferers. Depression is by far the commonest neurosis and it is the condition that I have decided to concentrate on today.

Depression

Although most western countries, including the United States and the UK, report higher rates of treated depression in women than in men, the rates are either equal in men and women or higher in men in some developing countries, such as India, Iraq, New Guinea and Zimbabwe; also, perhaps suprisingly, in Finland. These inconsistencies suggest that the incidence of depression varies from culture to culture.

In the UK, GPs record many more episodes of depression in women than in men, and women are higher users than men of psychotropic drugs (mood-altering medicines prescribed for neuroses). One study found that GPs gave women twice as many prescriptions for psychotropic drugs as men and that twice as many women as men received ten or more prescriptions in a year for these medicines. Another study found that while other drugs were prescribed equally to men and women, tranquillisers were given to a greater percentage of female patients. Frequent visits to the doctor increased the prescription rate for women, but not for men. And the authors concluded that for some doctors gender does play a role in whether or not a tranquiliser is prescribed, even after increased female presentation and multiple visits are accounted for. In contrast, men are at least twice as likely as women to use mood modifying substances bought in a shop or psychotropic drugs obtained from non-medical sources.

Rates of treated mental illness under-estimate the number of people in the general population who are ill because they are affected by an individual's readiness to recognise illness in him or herself and to seek medical treatment. In turn this is influenced by the accessibility of medical services and by the GP's ability to diagnose and treat mental illness and to refer on to a specialist where necessary.

Studies of the community at large provide a better measure of sex differences in the incidence of depression because they avoid the bias created by the different patterns of use of medical services. Community studies in the United States, the UK, Australia and various developing countries reveal no sex difference in the incidence of depression in children or the elderly. But some studies have found a clear excess of depression in adult women, and others that sex difference varies with age, marital status, social class, race and culture. For example, an American study found a sex difference in whites, but not in blacks; another found no sex difference in elderly whites, and an Australian study found no sex difference in adults aged thirty to thirty-nine or in married people in social class V. A study in Iraq found a sex difference in urban but not rural populations and an Indian study found that mental illness was more common in women in rural areas but in men in the cities.

How can we explain these conflicting findings? Three different types of explanations have been put forward: constitutional, environmental and sex roles. Each of these is discussed below.

Constitutional explanations

Constitutional explanations look to biological differences between the sexes to account for the different rates of depression. Research on homogeneous populations, that is, groups of men and women who have the same background, education, occupation, and so on, is useful here. We can safely assume that any difference in the incidence of depression in an homogeneous population is due to biology. If similar rates of depression are found in men and women in a homogeneous population, then we can conclude that any difference between the sexes found in a heterogeneous population, that is one where people come from all walks of life, is due to these social factors.

Three studies of college and university students in Australia and the United States found no differences in rates of depression experienced by men and women. The age range of university students is eighteen to twenty-one; there is a notable shortage of adequate surveys of homogeneous populations in age groups over twenty-five, partly because there are very few jobs that do not differentiate between men and women in terms of task, grade or pay.

In an attempt to fill this gap in the research, some years ago I carried out a study of a homogeneous population, selected to minimise the influence of occupational, social and role differences between the sexes. The population studied was made up of executive officers – men and women – from the Home Office, aged twenty to thirty-five, with similar education and subject to similar levels of social stress and support. I found no significant difference between the sexes in terms of prevalence or outcome of minor psychiatric illness.

Findings such as these suggest that neither biological factors nor sex differences in upbringing explain the higher rates of depression in women. But despite the evidence, we are still exercised by the biological explanation of sex differences in mental illness bequeathed us by Victorian doctors. Some of these explanations cite genetic differences, others hormonal.

There is little doubt that genes play a significant part in the aetiology of some serious mental illnesses, particularly major depressive psychoses and manic depressive psychoses, both rare conditions. But the evidence for a genetic contribution to depression is conflicting. Genetic evidence tends in the main to be drawn from family studies, in particular studies of twins. A comparison of rates of depression in identical or mono-zygotic twins (who have the same genes) and in non-identical or di-zygotic twins (who, like ordinary brothers and sisters, have different genes) enables us to estimate the genetic contribution to the illness.

Early twin studies supported a genetic cause of depression. They found that if one identical twin was depressed, the chance of the other twin being similarly affected was around two or three times as high as in non-identical pairs. But these studies were criticised because the twins all came from the same hospital. The most recent study carried out in Norway, and based on a nationwide sample, found no genetic contribution to depression. The balance of evidence from geneticists at the present time suggests that environment and not genes is more important in determining who becomes depressed.

Hormones are often invoked to explain behavioural and psychological differences between men and women. But no one has managed to link levels of sex hormones to mental illness. The evidence that mood change is caused by cyclical changes in female sex hormones is circumstantial; it is based on observations that depression tends to coincide with events in the female reproductive cycle, such as menstruation, use of contraceptive drugs, childbirth and the menopause.

The marked increase in depression in women shortly after childbirth cannot be explained by physiology; hormonal and other metabolic profiles of women who develop either a mild mood disturbance or a fully-fledged psychosis after childbirth are no different to those of normal women. The menopause is not associated with an increased risk of depression; where it does occur, the balance of evidence at the present time suggests that environmental factors are more important than the menopause itself. Although pre-menstrual tension is associated with depression, the evidence linking it to specific hormonal changes is sparse and conflicting.

Environmental explanations

Environmental explanations of depression focus on the role of social stress and social support. Life events, such as the death of a spouse, job loss and chronic social problems, including financial hardship, social isolation, migration and low social class, are implicated in the causes of depression. Social support can act as a buffer against social stress and reduce the risk of depression.

The evidence available so far suggests that there is no difference in the rates at which men and women experience major life events such as a death in the family. Nor is there evidence that life events actually have more impact on women than men, but there is support for the suggestion that women experience more chronic social stress than men; women still have less overall status than men, both at home and at work, and frequently earn less, even when in comparable jobs. Women have fewer leisure activities and report more physical illness.

We know that friends, both casual and intimate, provide protection from developing mental illness; levels of psychological symptoms vary with social support, even in the absence of a life event. Do women have less social support than men? A woman who works in an office, for example, will have the support of her colleagues, unlike a housewife isolated in her home who has less contact with others. Social bonds promote self-esteem in terms of appearance, abilities, competence and position in a dominant hierarchy, as well as the extent to which one believes one is lovable by others.

But is self-esteem more likely to be derived from a close, intimate attachment, or from social integration in a group? The latter appears more relevant to self-esteem in terms of appearance, abilities, competence and position, whereas believing that one is lovable is obtained from both kinds of social bond.

If the important attributes of self-esteem are more likely to be derived from social integration, then the finding of one Australian study that men report more opportunities for socialising than women may be of crucial significance to the question of whether women experience less social support than men. And while women report a better quality of social integration, quality may not make up for quantity for the purpose of enhancing self-esteem. This kind of research is still in the early stages and further work is required.

Sex roles

Sex role theories argue that differences in the early upbringing and social environment of men and women place a permanent stamp on them which affects their vulnerability to psychiatric illness in adult life. These theories are complicated: they examine the ways in which sex roles interact with a woman's constitution, the way they interact with the environment and their effect on women's attitudes towards illness.

We know that the development of both boys and girls is influenced by stereotypes of ability and that these stereotypes discourage girls from reaching their full potential and thereby promote low self-esteem. Feelings of helplessness, a salient characteristic of depression, result from learning that one's actions do not produce predictable responses. Some theorists argue that women have little influence on their environment: girls are schooled in 'learned helplessness' and lead more sheltered lives than boys, women exercise less initiative in selecting their spouses than do men and, when married, their lives are disrupted with the advent of children and they may have to follow their husbands both geographically and socially.

Other theorists have argued that sex differences in adult roles lead to different patterns of exposure to environmental risk factors for men and women. Married women have higher rates of mental illness than married men, and single and divorced women and widows often have lower rates than their male counterparts. These statistics refute the claim that women are more susceptible to mental illness than men as a result of their biology because, if that were the case, we would expect women to have higher rates of mental illness whatever their marital status. Sex role theories can account for these discrepancies: being married is a less stressful and more satisfying experience for men – who go out to work, associate with colleagues and earn money – than for women – who work for their husbands, do the housework and look after the children. Where a married woman works outside the home, it is often in an intrinsically unsatisfying and poorly-paid job.

More recent research has established a more complex relationship between marital status and mental illness, one that varies according to educational attainment, social expectation, social isolation, poverty and the presence of children.

The role of work in the mental health of women is controversial. Some people argue that employment outside the home increases women's role obligations because they still have to do the housework. Having to do two jobs causes overload which predisposes working women to more ill-health than housewives. Others counter with the observation that employment widens women's social circle and thereby provides extra social support which protects against illness. Furthermore, obligations outside the home may make it less likely that employed women will adopt a sick role.

Do sex roles influence the way men and women behave as patients? Four hypotheses have been proposed. The first is that women's traditional role as a homemaker is more compatible than man's role as breadwinner with being ill, going to a doctor, taking medicine, and spending time in bed. This view has been vigorously opposed: a woman's household and family responsibility make her illness far more disturbing to a family's equilibrium than illness in her husband.

Second, stereotypes of what is appropriate for men and women result in the sexes being socialised into different ideas about illness and ways of seeking help. Women more readily translate diffused feelings of psychological distress into a conscious recognition that they have an emotional problem. The suggestion that it is culturally acceptable for women to be expressive about their difficulties whereas men are expected to keep their problems to themselves and not to admit to distress is supported by the finding that women are indeed more likely than men to disclose more intimate information, especially unpleasant feelings such as anxieties and worries.

Third, illness is seen as more stigmatising for men than for women and consequently women are more willing to report symptoms and to seek professional help. For example, research carried out in the 1960s found that descriptions of people manifesting disturbed behaviour were more likely to receive rejecting and unsympathetic responses if attributed to a man than to a woman.

Lastly, a controversial suggestion which is not backed up by research is that sex stereotypes affect doctors' diagnoses, that is, they operate a double standard of judging mental health which discriminates against women.

Preventing mental illness

A great deal can be done to prevent mental illness. Our first priority must be to heighten awareness and improve attitudes towards people suffering from a mental illness. There is still considerable ignorance about mental illness, its frequency and treatment. This is a task for health educators, schools, medical schools, professional associations, and all those engaged in teaching the caring professions. Police, probation, the legal profession, housing staff, teachers, trade unions and industry, all need to know more about mental illness.

Depression frequently goes unrecognised and untreated. Half of all episodes recover within six months, even without treatment. The other half may last a year or more. Untreated depression is a major social problem: it is associated with an increased risk of physical illness, suicide and attempted suicide, marital breakdown, and the 'cycle of deprivation' where the emotional and intellectual development of children of depressed parents is affected adversely and they are much more vulnerable to mental illness in later life. Untreated depression is also associated with problems at work such as sickness absence, labour turnover, difficulties with colleagues, poor performance and accidents.

Depression responds well to support, counselling and, if necessary, antidepressant drugs. It is most important to raise general and professional awareness to the prevalence and symptoms of depression. Early detection by GPs and other members of the primary health care teams, school services, social services and occupational health services, is crucial. It is startling to realise that most people who kill themselves actually saw their doctor in the last day or two of their life.

It is clear that social support can act as a buffer against the effects of acute and chronic stress and thereby prevent mental illness or reduce its duration. But how can social support be mobilised? A few primary care teams have set up crisis intervention schemes which offer support and counselling to people at risk after major life events such as bereavement, redundancy and retirement. Intervention should occur immediately after the life event or, where possible, before. Voluntary organisations such as CRUSE and the Samaritans supplement professional help for people facing life events. Specific projects have also been set up to provide support for women suffering from chronic social stress; an excellent example is Newpin, a voluntary organisation which helps isolated mothers of preschool children. Support networks of friends, family, neighbours, churches and clubs should also be encouraged.

Finally, alcohol consumption has nearly doubled in the last twenty-five years. Most worrying is the disproportionate increase in alcohol drunk by women and especially by employed women. Women are responsible for a sizeable proportion of the recent expansion of the alcohol market and, as they are probably more prone than men to alcoholic liver disease and brain damage, this trend is particularly alarming. The increase in women's drinking has been attributed on the one hand to the removal of constraints upon women, including greater freedom of access to alcohol, higher discretionary spending power and less social stigma than has hitherto pertained to women who drink regularly, and on the other hand to the role conflicts which women may experience between their domestic, family and occupational committments. The media portrays drinking alcohol as a glamorous activity, although excessive consumption of alcohol leads to both physical and psychological problems. There is an urgent need for action to bring general levels of consumption of alcohol down to a safe level for both sexes.

Our conclusion that women's greater susceptibility to mental illness is caused not by their genes or hormones but by the world in which they live is grounds for optimism: the environment is more readily manipulated than biology and it provides ample scope for different preventative measures.

Mental illness in the postnatal period

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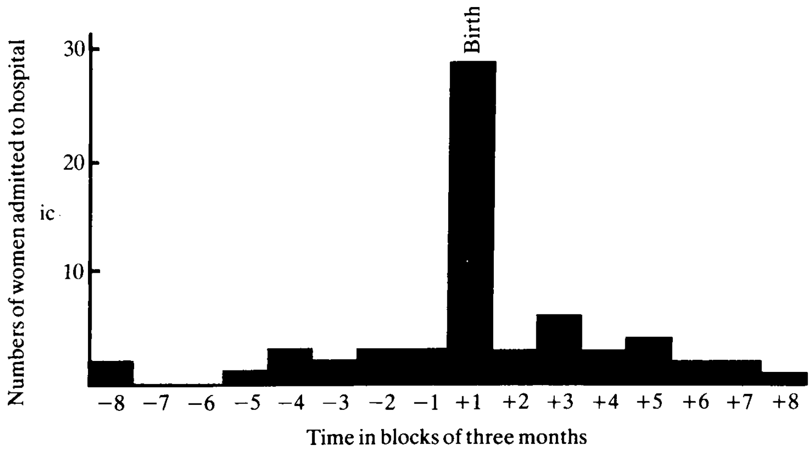
Childbirth can be a major destabilising influence on the mental health of women. The great majority of parents have a happy time when they bring a new life into the world; it is the plight of a minority that concerns us here. This paper summarises the research on postpartum psychosis and postnatal depression. It looks at the frequency of these conditions, describes symptoms, suggests causes, examines their effects on children, and discusses treatment and prevention.

How many women experience a postpartum mental illness? Between 10 and 15 per cent of recently delivered mothers suffer from postnatal depression and between one and two out of every 1,000 become psychotic within a few weeks after they have had a baby. This discussion of severe postnatal mental illness does not include the 'maternity blues' which are transient emotional reactions that occur in about 50 to 75 per cent of woman who have a child. The 'maternity blues' are relevant here only in so far as they might shed light on postnatal depression and postpartum psychosis.

Figure 6 Temporal relationship between psychiatric admissions for psychosis and childbirth



As Figure 6 shows, admissions to a mental hospital for treatment of a psychotic illness rise dramatically in the period shortly after childbirth. These statistics of hospital admissions refer mainly to the severe psychotic illnesses and they illustrate very clearly the greatly increased vulnerability of women to mental illnesses just after childbirth in comparison with other times. However, numbers derived from hospital admissions only tell a small part of the story and there is good evidence that for every mother who is admitted to mental hospital there are about a hundred in the community who are suffering with non-psychotic, postnatal depressions. These depressions are more insidious in onset and less florid and disruptive than psychotic breakdowns, but because of the very fact that they may be 'silent' and unnoticed, they may be equally or more damaging in the long term.

We can estimate the numbers of women who experience these illnesses each year by applying these statistics to the numbers of live births in the UK. A conservative estimate is that, after childbirth, 75,000 women become clinically depressed and 750 are admitted to a mental hospital with a psychotic illness related to childbirth. For at least half these women, this will be their first mental illness and for some it may mark the beginning of a lifetime of psychiatric illness. It is clear, therefore, that childbirth adds significantly to the pool of female psychiatric morbidity.

Although over the past century the physical health of mothers has improved greatly, their mental health has not. For example, in the past fifty years since 1937, there has been a welcome decline in maternal mortality: in 1937, between three and four women in every 1,000 died in childbirth, whereas today less than one woman in every 10,000 does so. Not all of this tremendous improvement in women's health can be attributed to better obstetric or antenatal care; much of it is due to better general health and nutrition.

These mortality statistics provide a stark but reliable index of physical health in relation to childbirth against which to place measures of mental health. Because Britain and France pioneered research into severe postpartum mental illness, we have statistics going back as far as the mid-nineteenth century. At that time, between one and two women in every 1,000 developed a severe postpartum mental illness necessitating admission to a mental hospital. The rate persists up to the present day. So against the context of a fall in the maternal mortality rate we are forced to conclude that the medical, social or nutritional advances that have occurred in recent decades have made no impact on the incidence of postpartum psychosis. Although we have no clear understanding of the causes of these psychotic reactions to childbirth, their close temporal association with delivery and their consistent rate of incidence across several decades and across cultures and societies suggests that the major causal influences are related to the neuro-endocrine or biological processes of childbirth.

Postpartum psychosis

What is the nature of postpartum psychosis? Here is an account of a woman who became ill very soon after the birth of her infant.

> She is sometimes melancholy, and occasionally excited and disposed to be violent, but it is a case in which we expect recovery. The maniacal attack is frequently of a lively character. The patient sings, talks incoherently, and laughs much; is sleepless, restless, and very active; dancing, undressing herself, running about, overturning chairs, breaking windows, kneeling down, praying loudly and sometimes manifesting sexual excitement. But generally she is still sensible enough to become tranquil when spoken to and to converse rationally for a time.
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> In the melancholic form there is general apathy and listlessness, mingled with anxiety about domestic affairs and self-reproach for neglecting them; the patient is indifferent to food and very silent, and exhibits no affection towards her infant or her husband; the countenance is anxious, the brow wrinkled; fretfulness, vague suspicions, various delusions and a disposition to self-destruction ensue.
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> In the great number of cases, there is no reasonable or manifest physical cause for the occurrence of the malady beyond the mere circumstance of delivery. We have nothing more satisfactory to say of the physical cause of puerperal insanity other than it proceeds from a peculiar state of the brain, following delivery.

This account encapsulates almost all the features of severe puerperal mental illness. It probably understates the hallucinations, delusions and bizarre beliefs some women have, but nonetheless it provides a very good picture. What strikes one most forcibly is that it was written by Dr John Connolly, Physician Superintendent of Hanwell Asylum, and published in the *Lancet* on 28 March, 1846. His final sentence underlines how little progress has been made since then in understanding the causes of this condition.

In 400 BC, Hippocrates offered two explanations of postpartum psychosis. The first, the lactational hypothesis, was that blood on the breast signifies madness. The relationship between the lactational hormones and mental disturbances is still of interest. The second hypothesis was that blockage of the discharges from the uterus made them seep upwards and thus cause madness. Today, doctors are very interested in the 'feed back' of hormones from the ovaries back to the hypothalamus and pituitary gland, and in the ways that hormonal changes may result in altered functioning of key brain regions.

At the Institute of Psychiatry in London, my colleagues and I are carrying out a research project aimed at studying women at high risk of developing a postpartum psychosis. We have scoured Greater London looking for women who have suffered a previous postpartum psychosis and who are currently pregnant. In such women the risk of relapse after delivery is estimated at between 20 and 30 per cent. Having identified such subjects with the help of colleagues all over London, we are in a position to carry out a prospective study of both psychological and biological factors which we think may cause some of these women to relapse. Prospective studies of this sort provide very powerful means of testing hypotheses about causal mechanisms, but they are extremely difficult to mount.

What we do know about the causes of postpartum psychosis is that first-time mothers are the most at risk: two thirds of all cases are first-time mothers. A survey published in 1987 in the *British Journal of Psychiatry*, showed that a first-time mother stands a 35 times greater risk of experiencing a psychotic illness than at any other time in her life. Contrast that with the likelihood of consulting a psychiatrist following a bereavement: the risk then is of the order of five or six times higher.

Single mothers are more likely to be admitted to a mental hospital, perhaps partly because they do not have the support of a spouse to look after them at home. Some researchers have found a relationship between psychosis and delivery by Caesarian section or a difficult labour, but others have not. The increased risk related to a previous history of a postpartum psychosis has already been mentioned above. Another important risk factor is a previous history of severe manic depressive psychosis either in the women herself or in her family.

Postnatal depression

Postnatal depression is 100 times more common than psychosis and, in terms of the burden of mental illness, perhaps much more important. Nearly all the surveys on the extent, nature and possible causes of postnatal depression have been carried out in this country. They show that about one in ten mothers become clinically depressed in the first three months after childbirth; many of these women will not have been depressed before.

What happens to a woman with a postnatal depression? This is an account of one of my patients who shows many of the typical features of severe depression.

> She was a thirty-two year old married woman with two children, aged two-and-a-half and four months when I first saw her. She had been referred by her GP because of persistent depression which had not responded to drug therapy.
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> She had been tearful for a day or so after the birth of her second child, but her

> symptoms of depression didn't become troublesome until a month later. By four months she was persistently low-spirited, her mood was worse in the mornings, she cried most days, she was irritable and had frequent tiffs with her husband. She often shouted at her toddler, but never hit her, although she often felt like doing so. She was guilty about her inability to cope and her aggressive feelings. At times she thought everyone would be better off if she were dead and she fantasised about taking an overdose but she never acted on such ideas. She avoided social contact to the extent that going out shopping on her own had become impossible, and in the last month she had begun to drink to the point of sedation. Her concentration and memory were affected. She suffered from early morning waking, loss of energy and loss of sex drive.

We started antidepressant therapy at full doses and also set up regular counselling sessions with both husband and wife. Things improved gradually over the next two months. Had her husband not been a pharmacologist working in a teaching hospital, she might not have been referred for a second opinion, or perhaps she might have come to our attention much later.

What causes postnatal depression? Some doctors believe that childbirth itself does not cause depression; instead they argue that a clinical depression following childbirth is an unrelated coincidence. But whatever the cause, the crucial feature is the timing: a depression is occurring at a critical time for the mother, the child and possibly for the father as well.

Women at risk of postnatal depression are those with a past history of depression either in themselves or in their families. Problems in early childhood and current relationships, a lack of social support and recent stressful life events are also relevant. Conflict in the marriage is found in almost every case. In community surveys of postnatal depression, a conflictual, unsupportive marriage has emerged as the most important factor predicting postnatal depression. In addition, a mother is more likely to become depressed postnatally if her spouse has a history of psychiatric problems. We are dealing therefore not just with a maternal problem, but a family problem. Any new studies of postnatal depression must include interviews of fathers and more detailed investigations of the marital relationship. Women who are ambivalent about the pregnancy and who may have considered a termination, but then change their mind, often tend to become depressed. Physical causes are severe obstetric stress and possibly hormone deficiency. This last explanation is suggested by those who advocate hormone (progesterone) treatment but it has never been proved scientifically.

Effects on children

A depression in a mother can affect her children's mental wellbeing in the long-term. A longitudinal study of cognitive and behavioural problems of the children of depressed mothers found that, at age four, children whose mothers were depressed in the first year of life had about a ten point deficit in IQ. But it is the milieu in which a child grows up, and not just a mother's depression, that is important. A child's IQ is also lowered where there is marital conflict and a history of mental illness in the husband. These factors are found to be interlinked with maternal depression, whereas other influences such as social class or extent of parental (maternal) education were also correlated with the children's performance on the IQ tests but were independent of the effect of postnatal depression.

In this country, every year approximately twenty to thirty children, or one in every 30–40,000 births, die at the hands of their parents, usually the mother's. The risk of a child dying at the hands of its parents in the first year of its life is eight times higher than the risk of dying as a victim of homicide in any subsequent year. In this respect, the first year is the most vulnerable time in a child's life and the law on infanticide reflects this. The law specifically treats childbearing women with compassion by recognising that the majority of women who kill their children are not criminals but are mentally ill. In America, where similar legislation does not exist, a woman can be sentenced to up to twenty years in prison, whereas in this country she would be placed on probation and required to submit to psychiatric supervision and treatment.

Services for mentally ill mothers

Britain has played a leading role both in research and in the treatment of puerperal mental illness. The tradition of joint admission of mother and baby is largely unknown outside Britain, Australia and New Zealand. The rationale behind joint admission can be traced back to the influential work of John Bowlby and others on attachment and the aim is to try to preserve and facilitate the relationship between mother and child, despite often severe maternal mental and behavioural disorganisation. Babies are usually admitted into general adult psychiatric wards in which one or more rooms may flexibly be used as nurseries or bedrooms. Such services have, typically, been carved out of existing facilities without any additional resources or staff. There exist, in addition, a few large, specialized mother and baby units with facilities and part- or whole-time staff entirely devoted to the care of severely mentally ill mothers with their babies. Such units serve a very important role in taking on difficult secondary or tertiary referrals, in carrying out research and in education. They are akin to intensive care units requiring high staff-patient ratios and are therefore expensive to maintain. For this reason they are vulnerable when health authorities seek to make economies because it is, of course, possible to nurse mentally ill women apart from their infants. Most mothers make excellent recoveries from their illnesses and they are without exception glad not to have been separated from their babies. Research is urgently needed into improving ways of flexibly combining hospital with homecare and of developing more specific drug therapies for puerperal mental illnesses in which there is a probable neuro-endocrine basis.

For every psychotic mother who is admitted to hospital there are probably a hundred others in the community suffering with non-psychotic postnatal depression. These depressions are not complicated by florid symptoms such as delusions (false and bizarre beliefs) or hallucinations (false perceptions) and they are similar in nature and duration to depressions unrelated to childbirth, except that very often there is an obvious focus for the mother's worries and fears and sometimes irritability and aggressive feelings: a young child. Most such depressions lift after about three months but in about a third of cases they may last for up to twelve months and even more. Surveys show that psychiatrists see not more than one or two out of every 100 depressed mothers. Quite rightly, the detection and management of postnatal depression is the province of the primary health care team in the community, that is, family doctors and health visitors in liaison with community midwives who may pass on information about women particularly ‘at risk’. Research into early detection and liaison with community services shows that it is the women who are most in need who are least likely to be able to struggle to surgeries or to hospital outpatient clinics. Many such depressed women remain undetected, silently helpless and hopeless, with chronic severe depressions which exacerbate pre-existing social and family problems. Those who are picked up tend to receive antidepressants in sub-therapeutic doses or courses of benzodiazepines which are mostly inappropriate. There is, therefore, much room for improvement in services. The repeated contacts which mothers make with health professionals during the antenatal and postnatal periods provide a unique opportunity to carry out preventive medicine. There is no dispute about the figures: year after year one in ten of the clientele of every obstetric service is becoming depressed after delivery, a third of them with severe and prolonged depressions, and one in a 1,000 mothers is becoming psychotic. In antenatal clinics one finds that when routine medical histories are taken, questions on past mental health tend to be asked cursorily, if at all. Women find it difficult to confide their personal problems if they meet a stranger each time they attend a clinic. The stresses of labour and delivery are also greater if there is no one familiar available in the labour ward and delivery suite in whom trust has already been established.

The gaps in the service for mentally ill mothers are nowhere better exemplified than by the frantic search for a suitable place when a newly delivered mother suddenly develops a psychotic illness. Delays in dealing with a complicated psychiatric emergency are not uncommon, admissions are often made in desperation to acute, general mixed-sex adult wards containing severely disturbed patients and sometimes there are unnecessary separations of mother and child because of inadequate facilities. The way forward is by education of health professionals and the planned development of resources, possibly on a regional basis. My own suggestion for such a regional service comprises a central specialised large mother and baby unit working in close liaison with smaller local satellite facilities for one or two mothers in psychiatric units in district general hospitals or local mental hospitals. These in turn would be linked by community psychiatric nurses with day-nurseries and GP-run well baby clinics. All the health service facilities would interface with mothers' support groups and consumer organisations. The efficacy of different models of care could then be examined in relation to particular local circumstances and needs.

The ultimate aim must be to provide a real safety net and a service which safely minimises the time a mother and baby spend in hospital and away from home. The vast majority of women do not require in patient or out patient psychiatric treatment and for them such a service should also provide the means of early detection and access to appropriate measures of support and therapy. To be effective, this kind of service must reach out to mothers through GPs and health visitors and it must be seen to be available. Liaison between obstetric, psychiatric and community services in this context is still rudimentary. Yet we already know that focussed counselling by health visitors can reduce the impact and duration of postnatal depression and that antenatal counselling can also be of benefit. This has been demonstrated by two projects: one based in Edinburgh and the other in London. These studies show that much can be achieved without recourse to substantial additional resources if the support and counselling is targetted at those patients and families who are most at risk.

In conclusion, I often reflect on the relative neglect of the suffering of women with postnatal mental illness. If, year after year, one in every 1,000 mothers developed a neurological disorder like Parkinson's Disease, or one in ten was found to have developed a debilitating anaemia which was not fatal and was responsive to treatment, I do not doubt that research centres would spring up across the nation with funds from government bolstered by charity support. Even more interesting would, I think, be the scenario if men were to develop such illnesses at similar rates whenever their wives had children.

The menopause

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The menopause occurs around the age of 50 when the ovaries stop functioning and menstruation ceases. The menopause does not mark the end of an active and healthy existence: in every walk of life, women at this age have positions of responsibility and seniority, be it domestic supervisor or head teacher. The Oxford English Dictionary defines the menopause as ‘a period of life when the vital force begins to decline’. A more appropriate definition is that it is a phase of a woman’s life when she loses her reproductive ability. Prior to the advent of effective contraception, the menopause was a welcome relief. And even today it offers a complete cure for menstrual disorders and many other gynaecological conditions.

The menopause is an important milestone. At the beginning of this century, the expectation of life at birth was just over 50. Now it is almost 80, which means that over a third of a woman’s life remains after the menopause.

How many women in the population are post-menopausal? In Scotland, over 900,000 women are past the menopause, or one in every three. The rates in England and Wales are very similar.

This paper looks first at the physiological and hormonal changes at the menopause. The symptoms will be outlined and the ways which they affect women’s health, both in the short- and long-term. Thereafter, the merits and disadvantages of hormone replacement therapy are discussed. Finally, a model of health services for women in their middle life will be described.

Physiological and hormonal changes around the menopause

For reasons we do not understand, as women reach the age of fifty the ovary becomes resistant to the stimulus of the pituitary gland and oestrogen levels fall. In its efforts to stimulate the ovary to work, increased levels of human menopausal gonadotrophin (HMG) are produced by the pituitary gland. The decline in oestrogen is gradual although it is rapid where a pre-menopausal women has her ovaries removed surgically. Oestrogen is still produced after the menopause, not by the ovary but in glands such as the adrenal gland and also in fat (adipose) tissue.

The most clear-cut and distressing physical symptoms of the menopause are hot flushes and night sweats. The vagina, which is dependent on oestrogen, becomes dry (atrophies) which can lead to irritation (pruritus) and occasionally pain on intercourse (dyspareunia).

The psychological symptoms are much more difficult to assess. Irritability, depression and loss of libido are not peculiar to the menopause; in fact, depression is probably greater before the menopause. It is hard to be certain that changes in the mental wellbeing of a woman around the menopause are due to her hormones and not to ageing or social factors. Significantly, in a survey carried out in Oxford in 1980, both men and women reported a decline in concentration and confidence after the age of 50. Furthermore, this same survey found that after the age of 50 men also experience physical symptoms, especially upset in bladder function.

Table 9 Percentage of women reporting symptoms during the last month

Hot flushes	51
Aches and stiffness	46
Trouble sleeping	46
Backache	45
Feeling depressed	43
Nervous tension	43
Diarrhoea	8
Bladder infection	5
Toothache	3

Table 9 shows the results of a more recent survey of women's health carried out in 1987 at a health centre in the east end of Glasgow, in women aged 45 to 54. Many said that they had experienced physical and mental symptoms in the last month.

Probably half of all women have menopausal symptoms at a level they can tolerate, perhaps with some advice and education. One in four will have no symptoms whatsoever; the remainder will have such severe symptoms that treatment is necessary.

Table 10 Death rates per 100,000 women by age and cause, Scotland 1983

Age	30–39	40–49	50–59	60–69
Heart disease (ICD* 410–414)	5.6	28.6	145.9	539.2
Breast cancer (ICD 174)	8.5	43.4	89.6	108.9
Lung cancer (ICD 162)	2.0	16.5	61.9	147.5
Cancer of the cervix (ICD 180)	5.6	7.1	12.7	21.1
Cancer of the body of the uterus (ICD 182)	0.6	1.3	5.6	9.7

* International Classification of Diseases

The menopause

The menopause has long-term effects on women's health. Osteoporosis (discussed in the next paper), a major cause of disability, increases dramatically after the menopause. Before the menopause, the major cause of death is cancer, especially of the breast and lung, whereas after the menopause it is heart disease.

Table 10 shows that, after the menopause, heart disease causes nearly twice as many deaths as cancer of the breast, lung, cervix and body of the uterus combined. These same findings are found in other developed countries; for example, in the USA, four times as many white women aged over 50 die of heart disease than total deaths from cancer of the breast and cancer of the uterus. These statistics demonstrate the protection against heart disease enjoyed by women before the menopause. Before the age of 55, six times as many men as women die of heart disease; after 55, the rate falls to two to one.

Why does heart disease increase in women after the menopause? At the menopause, there is a change in the fat lipid metabolism: the high density lipoproteins which are protective against heart disease (anti-atherogenic) are reduced and the low density lipoproteins which predispose towards heart disease (atherogenic) predominate. Of course, other factors such as diet, alcohol consumption and smoking influence the risk of heart disease.

Hormone replacement therapy

Research has shown that where a woman has troublesome menopausal symptoms, hormone replacement therapy, or HRT, is the only effective form of treatment. Sedatives and tranquillisers do not help and should not be prescribed.

Is HRT suitable for all women? It is inappropriate for a very few. The guidelines on who should take HRT are similar to those offered on the contraceptive pill. Women who have hormone-dependent cancer of the breast or of the body of the uterus or liver disease (which is really rather rare) should not take HRT. A benign breast lump does not rule out HRT. Women with cardiovascular disease, hypertension, who are obese, smoke and whose diet is rich in saturated fats, can take HRT as long as they are closely supervised and have their blood pressure checked regularly.

The main ingredient in HRT is the sex hormone oestrogen. The oestrogens in HRT differ from the contraceptive pill; natural oestrogens are prescribed for the menopause which are less potent and do not affect blood clotting. If oestrogen is taken continuously on its own, it can over-stimulate the lining of the uterus and, in a very small number of women, it may cause cancer.

To counteract the effect of oestrogen, another female sex hormone, progestogen, is usually taken for at least ten to twelve days. Some women find the side-effects of progestogen unacceptable: it causes return of vaginal bleeding, irritability and bloatedness, the very symptoms for which women sought treatment in the first place. HRT is being improved and refined all the time. The potential risks, however, must not be ignored and women should be aware of the current state of knowledge.

HRT can be delivered in four different ways: by mouth; vaginally; through a small pellet implanted under the skin; and by a skin patch. Each method has its place. The skin patch, which was introduced only recently, delivers oestrogen continuously at physiological levels and is therefore suitable for women who have had a hysterectomy.

HRT has long-term benefits. A survey of 5,000 women who had taken different types of HRT for five years found a lower than expected incidence of deaths from circulatory diseases and cancer. There is evidence that HRT protects against heart disease but this is not sufficiently strong to warrant its prescription solely for this purpose.

Health services for women in the middle life

Where can women obtain treatment for symptoms of the menopause? Some women find it embarrassing to talk to their GP about the menopause. And some doctors are reluctant to treat women because they see the menopause as an experience to be endured. Some women do not know that treatment is available and put up with their symptoms.

A busy gynaecological outpatient clinic or a packed GP's surgery is not the best place to discuss menopausal symptoms. Time is limited and women need at least thirty minutes relaxed unhurried discussion. Special clinics – at the hospital or in the community – for women around the menopause are ideal. Hospital menopause clinics are best suited to teaching and research. These clinics are a relatively recent innovation, the first was opened in Birmingham in 1972, followed by Oxford and then London. In Scotland, menopause clinics are centred in Glasgow. The one clinic at the Royal Infirmary was started in 1978, initially with financial support from a pharmaceutical company, and after a year became a fully-funded National Health Service clinic, although the pioneer work on long-term prevention of osteoporosis was commenced at the Western Infirmary much earlier in 1964.

The majority of women should be seen at a menopausal clinic in the community. Community clinics could be an extension of the family planning service or, when they are introduced, part of breast screening centres. In fact, breast screening centres will make ideal menopause clinics; they will see a majority of women around the menopause and could offer regular supervision, and follow a standard protocol for women on long-term HRT. At present, women attend one clinic for a cervical smear and another along the road, or perhaps at another part of the city, for breast cancer screening. A more comprehensive approach to women's health along the lines of a well woman clinic would seem logical but it does have resource implications.

With better health education, improved health care facilities where advice on HRT, if appropriate, is available, women of menopausal age can look forward to the future with confidence.

Osteoporosis

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Osteoporosis is a very common disorder which receives much less attention than it deserves, both from the general public and from a large section of the medical community. This paper describes osteoporosis, the problems it causes and their scale, before looking at the prospects for prevention and treatment.

What is osteoporosis?

Osteoporosis can be described as a reduction in the amount of bone, making it liable to fracture. It is particularly significant in causing fractures of the wrist, vertebrae and hip in post-menopausal women.

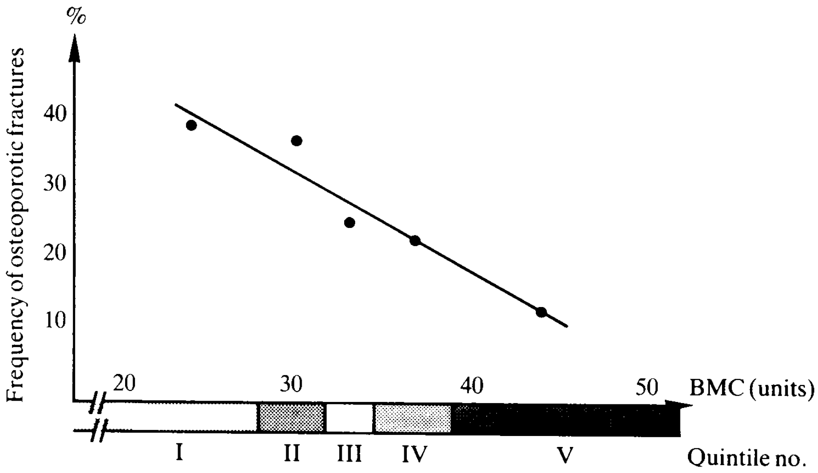
Bone is not an inert collection of calcium salts but a living structure. Someone with a stainless steel skeleton would sustain fractures within one or two years. Stainless steel undergoes fatigue damage – that is why wings sometimes drop off aeroplanes. But living bones are stronger than stainless steel because they are capable of self-repair. The living nature of bone confers upon it a special strength, but it is also the reason why things go wrong in osteoporosis.

This process of self-repair involves bone removal and bone formation (turnover) which takes place on the surfaces of the bone. Bone-eating cells are busily eating away bone to remove fatigue damage, and bone-forming cells are busy repairing that defect. A useful way of visualising the process of bone turnover is to compare it to eating an apple. Bone removal is like taking a bite out of the apple. This is not a normal apple, however, but a magic apple, as for every bite that you take, peel of equal volume is deposited at the site of a previous bite, so that as you eat, the volume of the apple – or the volume of the skeleton – neither increases nor decreases.

In osteoporosis, however, there is an imbalance between the amount eaten and that put back. In every cycle of removal and formation there is an overall loss of bone which can be measured as a decrease in bone mineral content.

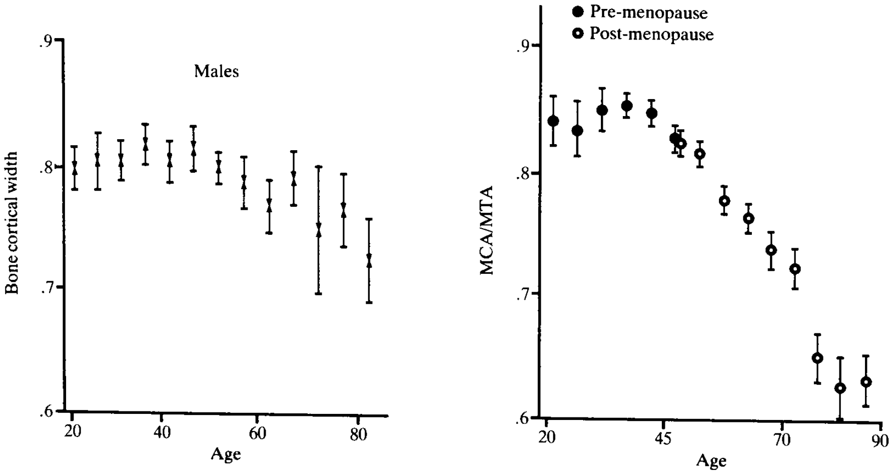
A decrease in the amount of bone is not the only cause of osteoporotic fracture. The rate of turnover is also important, as too is the trauma to which the skeleton is exposed. A decrease in bone mineral content is however the most important factor. A comparison of the frequency of fracture with bone mineral content reveals a compelling relationship between the two.

Figure 7 Relationship between bone mineral content and frequency of osteoporotic fractures



Osteoporosis is closely linked to the ageing process. Both men and women lose bone as they grow older, but women begin to lose bone at about the time of the menopause and their rate of bone loss is substantially greater than that seen in men.

Figure 8 Changes in cortical bone width with age



The effect of the menopause points to an important cause of osteoporosis in women. The action of oestrogens, both direct and indirect, plays a major role in the imbalance between bone removal and bone replacement.

What effect does osteoporosis have?

The single most important consequence of osteoporosis is bone fractures. After the menopause there is an increase in all fractures in women and especially those of the hip, wrist and vertebrae.

The state of the bone, however, is not the whole story. A skeleton with osteoporosis is like a very delicate vase; if you don't tip it over, it won't break. Clearly extra-skeletal factors are implicated in fractures.

Falls are a major factor, but their relative importance is very different in fractures of the wrist, hip and vertebrae. Falls play relatively little part in compression fracture of the vertebrae compared with a decrease in bone density, while in contrast a wrist is unlikely to be broken unless someone falls on the outstretched hand.

Scale of the problem

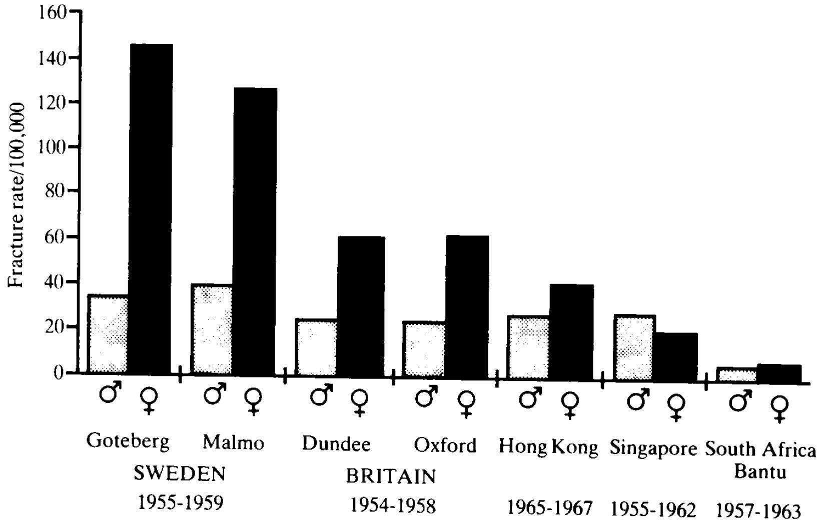
How many fractures are caused by osteoporosis? Unfortunately, we do not know the exact number. A conservative estimate would suggest that well over 100,000 and perhaps 250,000 fractures are attributable to osteoporosis in this country every year. A Danish survey relating frequency of fractures to age found that by the age of seventy more than 25 per cent of women have had one or more osteoporotic fracture. And this excludes any fractures of the vertebrae.

Table 11 Estimated annual incidence of osteoporotic fracture, excluding vertebral fracture, in England and Wales

	Rate/10,000			Number		
Age	Male	Female	F:M	Male	Female	F:M
35–44	98	35	0.4	33,300	11,700	0.4
45–54	114	77	0.7	31,300	21,200	0.7
55–64	96	113	1.2	25,700	32,200	1.3
65–74	75	129	1.7	14,400	31,700	2.2
75–84	95	189	2.0	8,900	31,900	3.6
85+	196	371	1.9	2,800	17,500	6.3
				116,400	146,200	

Although we do not know exactly how many women in Britain have osteoporotic fractures, Table 11 shows a conservative but educated conjecture.

Figure 9 Hip fracture morbidity rates in different populations



Data on hip fractures are more reliable as (unlike, for example, vertebral fractures) practically every patient who has had a fracture of the hip comes into hospital and gets entered into the statistics.

In the United States the cost of hip fracture alone was estimated at seven billion dollars in 1983, and current estimates are 13 billion dollars. No figures are available for the UK but in 1975 the direct hospital costs alone were estimated at £100 million, which at today's prices might be a little over £200 million. Add in the cost of other fractures and the total bill will not be far different from £500 million.

For women, the chance of getting a hip fracture is about one in six, about the same for wrist fractures and probably the same for vertebral fracture, so about one third of all women will have sustained one or more osteoporotic fractures by the time they die. This is comparable to the risk of cardiovascular disease (about 30 per cent) and much greater than the risk of developing breast cancer (9 per cent). Although osteoporosis is not usually a fatal disorder, more women die each year from osteoporotic fracture than from breast and cervical cancer combined. Thus the scale of the public health problem is enormous.

There are startling differences in the incidence of hip fracture around the world, as illustrated in Figure 9.

Two features stand out in this comparison of the incidence of hip fractures in developed and under-developed countries. Firstly, the differences amongst males between countries is relatively small, but the differences amongst women is very large. Secondly, the male to female ratio increases with economic development. This shows that the rate of hip fractures in women is in some way directly or indirectly related to civilisation. Thus osteoporosis is a disorder attributable in part to a developed lifestyle and one of the penalties of civilisation.

Within Britain, several studies have found that, although the incidence of other fractures has remained fairly constant, the number of osteoporotic fractures has increased substantially over the past 20 years.

Why has osteoporosis reached epidemic proportions in civilized countries? The answer can be attributed in part to the fact that the community is ageing and women in particular are living longer. And this trend is continuing. In the UK, the population over the age of 80 will increase by 29 per cent by the year 2000. Since the risk of fracture increases with age, more and more women are exposed to this risk.

This, however, is not the whole reason. By adjusting for age, the risk of fracture for women of different age groups can be calculated. This shows that increasing longevity is not the sole explanation; there is a true increase in risk at every age, as illustrated in Table 12.

Table 12 Incidence of fractured neck of femur in persons aged 35 years and over, Oxford 1954–8 and 1983. Annual rate/10,000 population

Men	Women			
Age	1954–8	1983	1954–8	1983
35–54	1.1	2.1	1.1	1.9
55–64	6.5	6.3	4.0	9.3
65–74	6.7	11.6	15.3	21.6
75–84	21.8	53.1	52.6	111.8
85+	48.8	131.6	140.5	322.3

Table 12 shows that for women (and men) of each age group the incidence of hip fracture nearly doubled between 1954–8 and 1983. Many studies undertaken in Europe have shown the same phenomenon, both for hip and for wrist fracture.

The number of hip fractures needing treatment in the future is startling. Assuming that the age and sex specific rates continue unchanged, then as the population ages we can expect an increase in hip fractures of both men and women from 46,000 in 1985 to 60,000 in 2016. But if the present upward trends in age-specific rates continue, then rather than 60,000 we will be confronted with 117,000 hip fractures by 2016. This would have a tremendous additional impact on the health of women and on health care resources.

Prevention and treatment

It may be possible to reduce the risk of osteoporosis by taking action early in life. Smoking, excessive alcohol consumption and immobility are risk factors for the development of osteoporosis and should be avoided for many reasons, not just to prevent women getting osteoporosis. Diet, particularly an adequate intake of calcium, vitamin D and total calories, is important, although the amount of calcium that is important in this regard is controversial. There are two more specific approaches to prevention. We can either treat patients after a fracture to try and stop further fractures, or we can try and prevent bone loss and fractures occurring in the first case. Giving women oestrogens or hormone replacement therapy (HRT) at the menopause seems to have a remarkable preventative effect on bone loss and subsequent fracture. As with all medicines there are advantages and disadvantages which have to be carefully weighed, but HRT is the most efficient way of maintaining bone density after the menopause. Oestrogens are not the only drugs that inhibit the loss of bone. Calcitonins and, in later life, calcium salts also have this effect. Other agents such as the diphosphonates are also effective, but are presently experimental.

Giving all women HRT at the menopause – put in the tap water, for instance – would be an effective way of reducing osteoporotic fractures. But this certainly would not be acceptable, nor necessarily desirable. Only one third of women will get an osteoporotic fracture. Should the two thirds who will never do so receive treatment? Clearly the answer is no.

So we have to devise ways of assessing the risk of fractures intelligently. The risk factors that have been identified for osteoporosis include excessive thinness, age, being caucasian, premature menopause, certain drugs (for example, corticosteroids), immobility and neuropathy, certain diseases (for example, anorexia nervosa and endocrine disorders), hysterectomy and smoking. Smoking, incidently, may not cause osteoporosis. Rather, smokers eat less and are thinner, have less adipose tissue and therefore have less peripheral conversion of oestrogen. It may be because they are more oestrogen deficient, rather than because they puff away at cigarettes, that they run an increased risk of osteoporosis.

These risk factors could be used to identify those most likely to suffer a fracture. Unfortunately none of these factors has sufficient sensitivity or specificity to be used with confidence to pinpoint individuals at risk. That leaves two further options. One is to identify those who lose bone unusually rapidly after menopause. There has been a great deal of interest in trying to identify simple ways of looking at the rate of bone loss and there are now a number of techniques available, such as direct or biochemical measurements, which might identify those women who lose bone at a faster rate.

But rate of bone loss is only half of the story. It is likely that women with very dense bones at the time of the menopause will never develop osteoporotic fractures, irrespective of the rate of bone loss, whereas those who have very slender bones will develop osteoporosis irrespective of the rate of bone loss. Thus if a woman has a very high bone density at the menopause, then even if she loses bone at an accelerated rate, she still has to live a long time before she has a substantial risk. Conversely the risk of fracture with accelerated bone loss is much greater, and occurs much earlier in life, starting with a low peak bone density.

Quite small differences, either in the density of bone at menopause or in the rate of loss, can make a considerable difference to the age at which a woman is at substantial risk of fracture. Thus knowledge of bone density at menopause and rate of skeletal loss are both important in identifying individuals at risk. Measuring bone density in a woman at the menopause and/or performing blood and urine tests to measure the rate of bone loss, would be considerably cheaper than either an osteoporotic fracture or ten years of HRT.

But what if an osteoporotic fracture has already occurred? Fortunately, some agents are capable of building bone up once it has been lost. Anabolic steroids, fluoride, parathyroid hormone, and the combination of calcitonin and phosphate are currently being used in the few specialised centres in this country to treat established osteoporosis. To give just one example, carefully supervised high doses of fluoride increase bone mass and seem to reduce the risk of refracture. Those patients who show osteosclerosis or increased density of the bones have many fewer fractures than those patients whose treatment was less effective or who remained untreated.

There are, then, effective medicines for both prevention and treatment. But they are not widely used. The prescribing rate for osteoporosis in the UK is only half that of the United States, and the medicines prescribed differ. In the US over a quarter are for oestrogens while in the UK only 1.2 per cent are, despite the fact that the value of hormone replacement therapy has been well known for many years. Prescribing habits are very varied across other European countries and really do not match the scientific knowledge that we now have.

Dr John Kanis

In conclusion, I would like to say again that we face an epidemic of osteoporosis in this country. But we know what goes wrong with bone and we have many drugs that are capable of altering the way in which bone remodels in a manner that reduces the risk of fractures. In other words, we have the tools, we know the questions and we have the intelligence. What we do not have are the resources to tackle this epidemic.

CLOSING ADDRESS
BY MRS EDWINA CURRIE
PARLIAMENTARY UNDER SECRETARY OF STATE FOR HEALTH

We are determined to carry on the work to promote women's health. One theme which has cropped up throughout the conference is that of partnership, a partnership in which we all have a role to play. On the one hand we have Government, the NHS, GPs and doctors, who are responsible for providing the services. On the other hand we all have our part to play as individuals, for example by doing what we can to live a healthy lifestyle, but also by making good use of the available services, particularly the new cancer screening services. We calculate, for example, that the breast cancer screening programme could save some 9,000 lives in this country by the end of this century; over the same period, the cervical cancer screening programme could save at least 1,000 lives a year. If women make sensible use of the screening programmes, we will avoid a lot of needless premature death, as well as pain, misery and anguish for our families. This can only be achieved if we publicise the value of responding to the screening invitations. Without a partnership between Government and individuals, all that effort, all those staff, all those laboratories, will have served no purpose.

Professional and women's voluntary organizations and the press are in a position to inform and influence many women who are their members and readers. This is a privileged position and one which carries major responsibilities. Their role in the partnership is to ensure that the women whom they reach receive accurate balanced information about health matters. We ask them to help change women's expectations, but in ways that can be met. We ask them to reassure women about the incidences and possible causes of these conditions, and what they can sensibly do to help themselves.

Many of the voluntary organizations specialise in particular conditions, such as cancer or mental illness. Others are able to give advice on a wide range of issues. Good quality advice is available, but there is still too much misleading comment and too much misunderstanding which must be put right. The worried well can be nearly as much of a problem as those who refuse a test which could keep them well, and those who keep on smoking despite all the information about the risks.

Of course voluntary organizations do other invaluable work helping women. Some are able to provide an information or counselling service for various problems. These organisations can help create an environment in which women can discuss health matters and find out more. They can help provide support and practical help to women who may have to come to terms with particular conditions.

Closing address

I think we can recognise with some quiet pride the progress that has been made to date and to which we have all contributed, in opening up the discussion on women's health matters and in taking action to help women. These topics were once the subject of ignorance and whispered old wives' tales. Now the bright light of scientific investigation has brought some answers, some cures, and very much more hope for the future. We can talk about them much more freely, and that's all to the good. But there's no room for complacency; there is more work to be done. It is up to all of us to do all we can to promote the best of health amongst all the people and all the women of this country.

ACKNOWLEDGEMENTS

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