THE CANCER HANDBOOK

A What Doctors Don't Tell You Publication

Every patient is unique, as is every illness. This book is intended as a source of information only. Readers are urged to work in partnership with a qualified, experienced practitioner before undertaking (or refraining from) any treatments listed in these pages.

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In memory of
Edith Hubbard andOlga McTaggart—
two courageous cancer patients

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Introduction

The very word 'cancer' fills us with dread, as though a death sentence had just been imposed. It is certainly one of the most feared of conditions—and increasingly one of the most widespread. At the start of this century, cancer claimed the life of one in 30; today it is estimated that it kills one in five. One in three of us in the West will have cancer at some point in our lives. It will also be the way most of us will die.

However, little is really known about it. As there are many cancers, so there are many causes. We know that smoking is responsible for 90 per cent of lung cancers in men and 77 per cent in women, and that smokers are 30 per cent more likely to develop cancer of the larynx.

All the billions of dollars of research we've thrown at cancer hasn't influenced survival one little bit. More people than ever are dying from the solid tumours that make up 90 per cent of all cancers. You'd never know any of this if you talked to the average oncologist. Most would talk of the great strides made in chemotherapy, the new drugs, the new combinations of treatments. But the measure of how much this constitutes the treatment of desperation is in the language used—'rescue' therapies and 'salvage' operations—and also the types of treatments being resorted to.

The medical spin-doctors have been particularly slick, instilling in the collective public mind a sense that we are winning the war. It's time to admit their deception. Take chemotherapy. No matter how many drugs or how high the dosage, it doesn't really work. Other treatments—the ones the American Cancer Society considers unproven—have better success rates. Once we all admit that, we can go forward.

And what about causes? Is there really such a thing as a cancer personality, someone more likely than others to develop the condition? Is it sparked by a poor diet? By power lines? By fluoridated water? By vegetable oils? By medicine itself? Very likely, there is a cumulative effect from all these things.

In this completely revamped and enlarged handbook, we look at some of

these possible causes and how to avoid them. We also look at possible preventative actions, such as taking vitamins and other supplements. Should you already be a sufferer, or know someone who is, we examine the types of orthodox treatments on offer. We've devoted a large section of the handbook to alternative treatments. The most enigmatic feature of these treatments is that they might just work for you if you truly believe they will.

Of course, quack treatments that offer false hope should be stopped, but first we must establish that they are indeed quackery. What is fairly clear is that, when subjected to scientific scrutiny, most orthodox treatments do not work (chemotherapy, for instance, has a success rate of just five per cent). Nonetheless, the cancer industry does not seem to run these treatments out of town for offering false hope. And, of course, with what we now understand about the influence of the mind on the body, if you truly believe that orthodox treatment will cure you, there's a reasonable likelihood that it could.

A booklet that covers so much ground would not have been possible without the help of many people. Our thanks are due to Dr Ellen Grant, Fiona Bawdon, Simon Best, the Bristol Cancer Help Centre, Richard Walters, Deanne Pearson, Harald Gaier and regular contributor Clive Couldwell for overseeing the editing. Finally, our special thanks go to the late Edith Hubbard, the mother of the publisher, to whom this book is dedicated. Her story is an inspiration to all those with cancer who have been condemned by the orthodoxy to die (see p 126).

Lynne McTaggart

Chapter 1
Possible causes

No easy answers

There is no one cause of cancer: cancer is not a disease you can 'catch', but rather a condition. Equally, there is probably no one trigger that can bring on the condition, but many factors—emotional, environmental, stress-related, dietary, medical—that can have a cumulative effect.

We all have cancer cells in our body; some immunologists reckon the body produces thousands every day. But as cancer pioneer Dr Josef Issels pointed out, a healthy body cannot develop cancer because it has a defence system that can recognise cancer cells and reject them. Cancer can, therefore, only develop in an unhealthy body or in one whose immune system is not functioning properly.

Research carried out by American psychologist Lawrence LeShan in the 1970s indicated that there may be a cancer personality—someone who because of their life and emotional responses is more likely to develop cancer. For instance, the cancer patients he interviewed tended to have a difficult childhood, an early sense of inadequacy, unsatisfactory parental relationships, an inability to vent their emotions and a defeatist attitude.

But, then, not everyone with that profile will go on to develop cancer, just as not every smoker gets lung cancer. Here, then, are some likely causes or factors that just may tip the balance. One possible cause could be the lack of vitamins and minerals that would be supplied by a healthy diet. The causes we have examined in this section are not so much a lack of something, but an overexposure to hazards.

Family history

Interestingly, family history, often fingered by medicine as a likely suspect—seems not to play the vital role we've all been led to believe. For instance, the link between a family history of breast cancer and a woman's

likelihood of developing the disease is smaller than suggested earlier, according to American research.

Earlier studies have suggested that there is a strong correlation—which has been enough to prompt some doctors to suggest that women in supposedly high-risk groups should have 'prophylactic mastectomies'—that is, just-in-case surgery to remove their healthy breasts—to avoid developing the disease. However, a study of 117,988 women aged 30 to 55 found that the "risk associated with a mother or sister history of breast cancer is smaller than suggested by earlier retrospective studies. Overall, within this population of middle-aged women, only 2.5 per cent of breast cancer cases are attributable to a positive family history."

They suggest that the size of the increased risk identified in earlier studies may in part be explained by "heightened awareness or overreporting of family history by patients with breast cancer, whereas control patients may be less aware of all breast cancer diagnoses in their family" (JAMA, July 21, 1993).

Contraceptives

The Pill

In the 30 years since the advent of the Pill, evidence has mounted indicating a relationship between it and breast and cervical cancer. The cervical cancer link is taken as read, but is considered an acceptable risk because cervical smear tests will catch it in time.

Dr Ellen Grant has been pointing out the dangers of the Pill for many years. In her book, *The Bitter Pill* (Elm Tree Books, 1985), Dr Grant describes it as "the most powerful immunosuppressant known in medicine". By far, the most common type of cancer in young women which can be caused by the Pill is cervical, she points out. Even when the Pill was first introduced into Britain in 1961, scientists already knew that oestrogens caused cancer in animals. However, animal studies supposedly demonstrated that use of a combined pill containing progestogen, an artificial progesterone, could protect against this cancer developing.

In l968, according to a report in World Medicine, two American studies had recorded a higher incidence of early cervical cancer, known as 'carci-

noma in situ'. One unpublished study, by a Professor Weid of America, estimated that the risk was increased six times—from three in 1000 to 18 in 1000 for those who had taken the Pill for five years or more— although, among 40,000 women screened, only 500 were still using the Pill after five years.

Officially, registration for cervical carcinoma in situ began in 1965. At that time, a young woman aged 15 to 24 had a less than one in 100,000 chance of developing a positive smear. By 1978, the figures for England and Wales had increased 10-fold—from 0.8 per 100,000 to 8.5 per 100,000—and had increased by 1220 per cent by 1981.

In 1972, very few single women in the country had ever used the Pill (nine per cent) but, by 1982, young unmarried women made up the majority of first-time Pill users at most clinics. The largest family planning clinic in Europe—the Margaret Pyke Centre in London—reported in The Lancet that one in 25 women attending had a positive smear and that there had been a sharp increase in serious abnormalities.

A large-scale American study of Pill users in Walnut Creek, California, found 37 cases of cervical cancer among Pill users under 40 and one case in the control group. Again, although smokers were statistically more likely to be affected than non-smokers, the actual figures were nearly the same—14 smokers and 18 non-smokers. What this means is that cancer is more prevalent among non-smoking Pill users than among smokers who don't take the Pill.

Dr Albert Singer said, at a meeting of the Women's National Cancer Control Campaign in London in June 1985, that a new incurable type of cervical cancer was becoming epidemic. The three-year survival rate for women under 24 had declined by 93 per cent to only 72 per cent between 1977 and 1979. Half the under 40s inflicted with invasive cervical cancer now die within five years or less. When human papillomavirus type 16 (genital warts) was present in the male partner, 80 per cent of the women developed precancerous smears. A 1985 World Health Organization study from eight developing countries showed that invasive cancer increased with length of Pill use.

But it is not the only cancer linked to the Pill. Professor Malcolm Pike and

his team from California presented their data in The Lancet, in October 1983, showing that breast cancer was increased four- or fivefold among women who had taken the Pill for six years or more before they were 25, and the risk was greater for high-dose progestogen pills. It was the third study to find that young women who had begun the Pill before they were 25, or before their first full-term pregnancy, had an increased risk of breast cancer, and the risk went up the longer the Pill had been taken.

The latest damning news comes from a study by the Department of Epidemiology at the Netherlands Cancer Institute.

In the Dutch study, 97 per cent of the 918 Dutch women with invasive breast cancer, diagnosed before age 36, had taken the Pill. For those starting before age 20, the risk was increased 3.5 times. Longer use increased the risk, with trends increasing sharply for younger and older Pill-takers.

Their largest group of cases in this study were aged 36 to 45, had taken the Pill for less than four years and had a 1.4 increased risk.

Klim McPherson, an epidemiologist at the London School of Tropical Medicine, has estimated that, because of the latent period, this risk could increase to one in four among younger longer-term Pill-takers. The risk is increased by 30 times if a near relation has the disease due to breast cancer genes. Any menopausal oestrogens further ups their risk 3.5 times.

Depo-Provera

The injectible long-lasting contraceptive, Depo-Provera, doubles the risk of breast cancer among women who have taken it for less than five years. It seems to be at its most dangerous in the first few years of use.

This startling discovery was made soon after the hormone was finally approved for marketing in the United States. Many countries had held back from granting a licence because of the breast cancer risks associated with the progesterone contraceptive. The sudden change of heart by the American Food and Drug Administration (FDA) was caused by two studies, from New Zealand and by the World Health Organization, which both concluded that the contraceptive did not heighten the cancer risk.

However, a closer analysis of the data shows that the risk in fact doubles in the first five years of taking the hormone, and then drops to almost

nothing after that. Researchers believe that Depo-Provera might quicken tumour promotion and growth. If it does, its potency must be far stronger than doctors believe because just one injection seems able to influence cancer growth for the next five years (JAMA, March 8, 1995).

Condoms

Having been lauded as the safest contraceptive, the male condom is now thought to cause cancer in the woman, and may also make her infertile.

Rather than the condom itself, the culprit appears to be talc, a dry lubricant on the surface of condoms. Studies have shown talc to cause ovarian cancer as well as fibrosis on fallopian tubes, causing infertility. Strangely, the FDA recognised the dangers of talc on surgical gloves, and banned the process, but allowed its continued application on condoms.

Writing in the Journal of the American Medical Association, Candace Kasper and P.J. Chandler of Dallas, Texas, fear there could be a major outbreak of ovarian cancer in years ahead. They also urge condom manufacturers to stop applying talc (JAMA, March 15, 1995).

Other treatments

In-vitro fertilization (IVF)

The dangers inherent in the Pill and Depo-Provera seem to hold good for other interventions that also muck about with the body's natural hormonal balance.

Doctors are beginning to fear that assisted-conception techniques such as IVF could be causing cancers, especially ovarian cancer.

The long-term effects of the treatment are not known simply because nobody has bothered to research them. Incomplete studies have pointed to a rise in endometrial cancer, breast cancer and ovarian cancer, but the findings are not conclusive.

When the Australian National Health and Medical Research Council looked for reactions to the drugs used in the procedure, they found just 37 reports filed with the authorities since 1971, which demonstrated the bias of voluntary drug surveillance programmes, they concluded.

Hormone replacement therapy (HRT)

HRT is another hormonal treatment which older women—who may already have been on the Pill in their younger years—are increasingly being encouraged to take. This drug can increase your breast cancer risk by 60 per cent, according to three large-scale reviews of many of the large studies to date.

It is acknowledged that when a woman with a womb takes oestrogen on its own, she increases her chances up to 20-fold of getting endometrial cancer after several years. This is because oestrogen causes rapid proliferation of endometrial cells (as it does in pregnancy). This risk can continue for up to five years after stopping HRT.

To counteract this, most women are given the additional artificial hormone progestogen (progestin in the US) for 10–12 days per month, which imitates the second half of the menstrual cycle, producing withdrawal bleeding. Researchers from the Menopause Clinic at King's College School of Medicine and Dentistry found that endometrial stimulation in women given HRT implants occurred for an average of two years after the treatment was finished (BMJ, February 17, 1990). What this means is, to lower your risk of getting endometrial cancer, you would have to take oral progestogen for two years or more after the oestrogen in the implant has been exhausted.

Long-term use of HRT and the Pill also greatly increases the risk of breast cancer in older women, researchers have found.

During a study of the bone mineral density of 6854 women aged over 65, researchers found that women with increased bone mineral density have a far higher chance of developing breast cancer. As bone mineral density is increased by long-term usage of oestrogen and progestogens, such as in HRT and the contraceptive pill, it follows that the primary indicator for breast cancer risk is hormone supplementation and not bone mineral density, as the researchers have suggested. Insulin levels can also affect the level of bone density so that, too, should be included in the equation.

The researchers, from the University of Pittsburgh, say their findings mean that people should think more carefully about taking HRT for anything other than osteoporosis (JAMA, 1996; 276: 1404–08)—although that

supposed benefit of the drug has also been discredited (see the **WDDTY** *Guide to The Menopause*).

HRT may also increase the risk of death in countries where there is a low level of heart disease. Researchers there found that, rather than protecting women from fatal heart problems, HRT was increasing the risks in Italian women. The chances of developing breast cancer increased by up to 1.46 times if the therapy was used for between 15 and 20 years, while the risks for heart disease increased by 0.88 times after five years (BMJ, 1996; 313: 687).

Diethylstilbestrol (DES)

DES is another fertility-type treatment linked with cancer. Women who took this miscarriage-prevention drug during pregnancy in the 1950s and 1960s have a statistically significantly increased risk of developing breast cancer (JAMA, April 28, 1993).

Researchers at the Boston University School of Public Health studied a group of 3029 women who had taken DES and the same number who had not been exposed to the drug. They found 325 cases of breast cancer altogether—185 among the DES women and 140 among the unexposed women.

"The incidence rate of breast cancer per 100,000 woman-years was 172.3 among exposed women and 134.1 among the unexposed," they concluded. When other factors, such as age and age when pregnant were taken into account, the relative risk associated with DES exposure was 1.35 times that of those not exposed to the drug. The study did not bear out earlier findings which suggested that the risk increases over time.

The children of these women may also face a far greater risk of developing breast cancer. Specialists from the British Columbia Cancer Agency have reported two cases—both daughters of DES patients, aged 28 and 34—who have breast cancer.

DES was used extensively to treat possible miscarriage and infertility up until 1971 in the US, and until 1978 in Europe, when the drug was removed from the market. DES is one of the few external factors accepted as increasing the risk of breast cancer among women; the other two are alcohol and

ionising radiation. The risk among DES mothers increases by 35 per cent.

It has been recognised that DES daughters are more likely to develop cervical cancer, and suffer premature births and miscarriages, but it was thought the breast cancer risks were not passed on: "We may now begin to see the full extent of its effects as DES daughters grow older," say the doctors in a letter to The Lancet (1996; 348: 331).

Growth hormones

It is not just women who are at risk because of medicine's hormonal meddling. Men may be more likely to develop prostate cancer if their mothers took pregnancy and growth hormones while they were in the womb.

This link has been made by Swedish researchers after they studied the birth records of 250 men who developed prostate cancer, and compared them with records of 691 others, 80 of whom died from prostate cancer. They found that those born full-term, and with a high birth weight and height, were more likely to develop the cancer. Conversely, those whose mothers had preeclampsia, or who themselves were born prematurely, were much less likely to develop prostate cancer.

Although there was no direct proof that the mothers were taking hormones, the scientists believe the data support earlier hypotheses of a link between hormones and prostate cancer (BMJ, 1996; 313: 337–40; see also the **WDDTY** *Guide to Men's Health* for more information on prostate cancer).

X-rays

As many as 250 cases of fatal cancer each year are caused by unnecessary radiography, according to the Royal College of Radiologists and the National Radiological Protection Board. The two bodies produced a set of guidelines to cut radiation exposure by half without affecting the quality of care. The report estimated that at least one-fifth of all x-rays were unnecessary and that routine chest x-rays, x-rays to diagnose lower back pain and mammograms for low-risk women under 50 were all unnecessary.

Dental x-rays may be particularly dangerous as they are often taken by untrained staff.

At least one leading expert blames the high rate of breast cancer in the US on the liberal use of medical x-rays. Many women were given high doses of x-rays by doctors before the carcinogenic effects of radiation were appreciated. Probably 75 per cent of all the 182,000 cases of breast cancer reported in the US every year are due to medical x-rays, he says.

The claims are made by John Gofman, Professor of Molecular and Cell Biology at the University of California, after he studied medical research going as far back as 1910. But Gofman's conclusion has not impressed many cancer experts who fear that women may be deterred from having mammograms, which supposedly detect early cancers.

Since preparing his book, *Preventing Breast Cancer*, Gofman has increased his estimates of cancers caused by x-rays to 90 per cent. He points out that x-ray therapy was once very prevalent—used to treat a range of conditions from pneumonia to acne and hair removal. Gofman estimates that women's breasts receive 0.4 rad of medical x-rays a year for each year of life; comparing that dosage with the levels suffered by Japanese atomic bomb survivors, he reckoned that 114,000 women, or 62 per cent of those diagnosed every year with breast cancer, could blame x-rays as the cause. A more realistic figure would be 75 per cent, he concluded (*Preventing Breast Cancer*, by Dr John Gofman, Committee for Nuclear Responsibility, San Francisco, California).

However, a recent study rejects Gofman's findings. The US National Cancer Institute has assessed the breast cancer risk among radiology technicians, and found that their work was not a contributory factor (JAMA, August 2, 1995).

Meanwhile, according to the National Radiological Protection Board and the Royal College of Radiologists in the UK, unnecessary radiation from x-rays may be responsible for between 100 and 250 of the 160,000 cancer deaths in the UK every year and perhaps 1000 cancer deaths a year in the US.

In the US, a study by the National Cancer Institute (JAMA, March 13, 1991) found a link between x-rays and multiple myeloma—a form of bone cancer. They looked at more than 25,000 x-rays and concluded that, with myeloma sufferers, "there was consistent evidence for a dose–response

trend regardless of the lagging interval. The most frequently exposed were at highest risk, reaching fourfold."

In 1991, the National Academy of Sciences reported that estimates of lifetime cancer risk following relatively low doses of radiation may be as much as four times larger than previously thought (NAS–National Research Council, *Health Effects of Exposure to Low Levels of Ionizing Radiation*, Washington, DC: National Academy Press).

All radiation is harmful (and your body never 'forgets' the radiation it has received), but some groups are particularly at risk. Unborn children are especially susceptible and pregnant women should avoid all x-rays except in extreme, life-threatening situations.

The link between exposure of fetuses to radiation and childhood cancer is well documented (Int J Cancer, 1990; 46: 362–5; Br J Cancer, 1990; 62: 152–68). In *Health Shock* (Prentice-Hall, 1982), M. Weitz claims that the x-rays given to about a quarter of all pregnant women during the 1950s and 1960s "caused between five and 10 per cent of all childhood cancers in America and Western Europe".

Once they are born, children remain at increased risk. In *Medicine on Trial* (Pantheon), John Gofman and Egan O'Connor claim that "a newly born child is about 300 times more sensitive than a 55-year-old to induction of cancer by radiation." Five-year-old children are "about five times more likely to get later radiation-induced cancer than an adult given the same radiation dose at age 35," they add.

The environment

Viruses

A blood test may reveal whether you are suffering from a viral infection, which may have triggered your cancer. Several oncogenic (cancer-causing) viruses carried by farm animals (such as herpesviruses and avian leukosis virus in chickens and other poultry, and papillomavirus in cattle) have been linked to non-Hodgkin's lymphoma (NHL) in farmers (Cancer Res, 1992; 52 [Suppl 19]: 5496s–500s).

The Epstein–Barr virus (EBV) is known to play a role in the development of aggressive NHL. In one study of 104 NHL patients, blood samples

revealed antibodies to EBV (Cancer Res, 1992; 52 [Suppl 19]: 5479s–81s), suggesting that subclinical immune suppression by this virus may be at work in the body long before NHL develops.

In the Italian population, the prevalence of those who have both NHL and hepatitis C virus (HCV) is very high and, like EBV, HCV infection can precede NHL, often by many years (Recenti Prog Med, 1998; 89: 63–7).

Fluoridated water

An American government study has confirmed that fluoride added to water causes cancer in laboratory animals. The study, conducted by the National Toxicology Program and overseen by the American Public Health Service, looked at the link between water fluoridation and mouth, liver and bone cancers in rats and mice.

The results, interpreted by John Yiamouyiannis, President of the Safe Water Foundation in Ohio (writing in the Townsend Letter for Doctors, an American journal) showed, among the rats exposed to the fluoridated water:

- precancerous changes in cells in the mouth
- an increase in the incidence of tumours and cancers in the mouth
- a rare form of bone cancer
- an increase of tumours in the thyroid.

The mice exposed to fluoridated water had a rare form of liver cancer. "The types of cancer caused by fluoride in rats and mice may be entirely different than the types of cancer caused by that same substance in humans," wrote Yiamouyiannis, who has performed epidemiological studies on the effects of fluoride.

The animals were given higher doses of fluoride than humans would be exposed to in order to adjust for their shorter exposure to fluoride. Also, according to the study, says Yiamouyiannis, "man is generally more vulnerable" than the experimental animals to carcinogenic effects. Nevertheless, the doses of fluoride linked to a higher cancer risk were between 1/10 to 1/50 of that of benzene, another established carcinogen.

Pesticides

Pesticides like DDT may also trigger breast cancer. Several recent studies have shown a fourfold increase in the risk of developing breast cancer among women with high body levels of DDT. The US has controlled the use of DDT to levels 5000 per cent below those of other developed countries, although environmentalists fear these controls could be relaxed with the General Agreement on Tariffs and Trade (JAMA, April 20, 1994).

Chemical crisis

In the last 20 years, the incidence of NHL increased by approximately 73 per cent. A large proportion of that increase occurred between 1973 and 1987, when the incidence of NHL rose by a massive 51 per cent (Science, 1991; 254: 1131–8). Scientists admit that they are baffled by the steady rise of this immune-system cancer, which now accounts for around three per cent of all cancers.

The term 'non-Hodgkin's lymphoma' is something of a catch-all phrase as it covers several different cancers of the lymphatic system, that complex network of cells and channels which runs throughout the body and provides a crucial foundation for the immune system.

Unlike the link between smoking and lung cancer, the causes of NHL are not straightforward. It is probably the result of a complex series of interactions within the body in response to poisons, both within and without. To understand the importance of the link between toxins and immune-system cancer, it is helpful to know that the role of the lymphatic system is primarily to clear debris and help defend the body.

The lymphatics are thin vessels which branch out like veins and carry lymph—a watery colourless fluid—to all parts of the body. Clusters of bean-shaped organs called lymph nodes are found along this network under the arms and in the pelvis, neck and abdomen. The lymph nodes make infection-fighting lymphocytes and antibodies; they also act like a filter and drain, inspecting lymph fluid for foreign matter.

Because lymphatic tissue lies throughout the body, NHL can start (and spread) to almost anywhere, including the liver, bone marrow and spleen.

We are only just beginning to appreciate the impact that exposure to nox-

ious chemicals has on the immune system. In a review of environmental factors associated with NHL, 54 statistically significant associations between NHL and solvent exposure were reported (Cad Saude Publica, 1998; 14 [Suppl 3]: 41–66).

It has been demonstrated that the incidence of NHL rises among people with extreme exposure to poisons, such as due to the accidental release of toxic chemicals or in regions with unusually high concentrations of certain industrial activities. In 1976, an accidental release of large quantities of dioxins in Seveso, Italy, resulted in the exposure of more than 5000 local residents. Follow-up studies demonstrated elevated rates of NHL and soft-tissue sarcomas among exposed residents (Epidemiology, 1993; 4: 398–406).

Pesticides in everyday use, such as phenoxyacetic acid herbicides used extensively to control terrestrial broad-leaf plants, are also implicated. The most common phenoxyacetic acid herbicides are 2,4-D (2,4-dichloro-) and 2,4,5-T (2,4,5,-trichloro-), which together make up Agent Orange.

One study found that farmers who used 2,4-D, the most common lawn pesticide, more than 20 days a year were six times more likely to develop NHL than people who were not exposed. In addition, frequent herbicide users who also mixed the herbicides themselves were eight times more likely to develop this type of cancer (JAMA, 1986; 256: 1141–7).

In another study, men in Iowa and Minnesota who regularly handled the pesticides and insecticides carbaryl, chlordane, diazinon, dichlorvos and dichloro-diphenyl-trichloroethane, lindane, malathion and toxaphene were at least 50 per cent more likely to contract NHL than non-farmers (Cancer Res, 1992; 52: 2447–55).

Studies in Sweden have shown similar results for the use of herbicides and fungicides (Cancer, 1999; 85: 1353–60), and the use of the insecticide lindane has been shown to increase the risk of NHL by as much as 50 per cent (Am J Ind Med, 1998; 33: 82–7), with long-term users most at risk.

Increased exposure to PCBs (polychlorinated biphenyls), which are found in detergents, flame retardants, plastics and insulation materials as well as in hairspray and other personal-care items, may also be linked to the continuing rise in NHL

Researchers at the National Cancer Institute (NCI) in Bethesda, Maryland, matched the blood of 74 NHL patients against that of 147 controls without NHL. They found that blood concentrations of PCBs were nine per cent higher in NHL sufferers than in those without the disease (Lancet, 1997; 350: 240–4).

Another study of those exposed to the flame retardant tetra-BDE found that NHL patients had significantly higher blood concentrations of the chemical. At-risk groups include professional car, bus and truck drivers (Lakartidningen, 1998; 95: 5890–3).

Benzene (chemically similar to lindane and DDT) is another common toxin linked to NHL (J Pathol, 1999; 189: 448–53). According to naturopath Hulda Clark, it is found in a huge range of everyday products—from toothpaste and breakfast cereal to bottled water and lubricated condoms (*The Cure for All Cancers*, Promotion Publishing, 1993).

In the UK, 70 per cent of benzene exposure is due to vehicle exhaust emissions (J Pathol, 1999; 189: 448–53).

Power lines

Living near power lines may also put you at greater risk. Evidence shows that the relatively low levels of electromagnetic fields (EMFs) from mains electricity or power lines can raise the chances of your child getting leukaemia by three or four times.

In 1979, two American researchers, Nancy Wertheimer and Ed Leeper, published the first major Western study linking EMFs from power lines and domestic wiring configurations to an increase in childhood cancer (Am J Epidemiol, 1979; 109: 273–84).

There are around a dozen studies of residential exposure to EMFs in Britain, nine of which show an elevated risk of childhood cancer; the three studies which do not have been criticised for their methodology. The density of magnetic fields is measured in teslas. On average, the positive studies found a significantly increased risk at 200–300 nanoteslas—an nT is one-thousandth of a millionth tesla. Yet, the National Radiological Protection Board (NRPB) only begins to investigate at a level of 1600 microtesla (m T)—a millionth of a tesla—a difference of between 5400- and 8000-fold.

An average household level is 70 nT whereas the level beneath power lines can rise to over 1000 nT.

In the US, the situation is very different. Many researchers advocate a general policy of 'prudent avoidance'—recommending a number of safety measures to avoid excessive exposure. At least 10 states have restrictions on the level of EMFs allowed in houses built near power lines.

Electric and magnetic fields surround all electrical conductors, including power lines, appliances and the wiring in your house. EMFs comprise electrical fields and magnetic fields. Electrical fields can be shielded by walls and trees and, unless you live near a power line, aren't a problem. Magnetic fields, on the other hand, are generated by electrical currents whenever you use electricity. They can travel through walls and only be shielded against with lead shields, and careful design of wiring and electrical equipment.

Drs Maria Feychting and Anders Ahlbom, at the Institute of Environmental Medicine at the Karolinska Institute in Stockholm, conducted a large-scale epidemiological study which found that children exposed to average domestic EMFs of 300 nT or more had almost four times the rate of leukaemia than expected (Am J Epidemiol, 1993; 138: 467–81).

The subjects were the 500,000 people who had all lived within 300 metres of the country's network of 220 and 400 kV power lines between 1960 and 1985, and among whom 142 children developed cancer.

The study established for the first time a clear dose–response correlation between levels of magnetic field exposure and increased incidence of leukaemia. Children exposed to more than 100 nT EMFs had twice the incidence of leukaemia than those exposed to less than 100 nT; those exposed to above 200 nT had nearly three times the incidence and, in those exposed to over 300 nT, nearly four times. Similar results were obtained when exposure was defined by proximity to power lines.

Such was the impact of this and another study released at the same time, which also found a strong link with brain tumours in men occupationally exposed to EMFs (Cancer Causes Control, 1993; 4: 465–76), that Sweden's National Board for Industry and Technology (NUTEK) formally announ-

ced that it "would act on the assumption that there is a connection between exposure to power-frequency magnetic fields and cancer, in particular, childhood cancer."

In addition, NUTEK has advocated a moratorium on erecting power lines that create fields of 200 nT near houses and school buildings until further guidance has been drafted.

The first link between female breast cancer and exposure to EMFs began with studies of the rare cases of breast cancer in men. In 1989, Dr Genevieve Matanoski and her colleagues at the Johns Hopkins School of Public Health in Baltimore, Maryland, found that there was significantly more than expected cases of breast cancer among New York state central telephone technicians (Lancet, March 23, 1990).

This was followed by studies showing that telephone linesmen, electricians and electrical power workers all suffer an increased breast cancer risk (Am J Epidemiol, 1991; 134: 340–7; Lancet, 1990; 336: 1596; Lancet, 1992; 339: 1482–3).

In 1992, the first connection was made between EMF exposure and female breast cancer. Dr Dana Loomis, of the University of North Carolina, observed a 40 per cent increased mortality from the disease in female electrical workers, which is twice the number of deaths expected in women between 45 and 54 (J Nat Cancer Inst, 1994; 86: 921–5).

But the study that has prompted the most interest is the recent work by Loscher in Germany, which has now confirmed a relationship between levels of magnetic fields and likelihood of developing breast cancer in rats treated with a chemical carcinogen (Carcinogenesis, 1995; 16: 1199–25). The stronger the magnetic field, the more likely the rats were to get cancer.

One clue as to the precise mechanism by which EMFs can trigger cancer came from Loscher's rats. When exposed to 10,000 nT, the rats' night-time blood melatonin levels decreased by one-third. Melatonin is produced by the pineal gland, the body's master control gland, and is a powerful antioxidant that scavenges excess free radicals in the body. If allowed to build up in the body, free radicals can damage DNA and increase risk of cancer as well as human degenerative disorders like heart, Alzheimer's and Parkinson's diseases.

We're now learning that melatonin is extremely sensitive to magnetic fields. A growing number of researchers, led by Dr Russel Reiter at the University of Texas Health Science Center in San Antonio, believe that the suppression of melatonin production is the most likely link between EMFs and all cancer (J Pineal Res, 1995; 18: 1–11). At the 1994 annual meeting of the Bioelectromagnetics Society, Robert Liburdy, of the University of California's Lawrence Berkeley Laboratories, reported that he had observed that, when cultured human breast cancer cells were exposed to magnetic fields of between 600 nT and 1200 nT, the anticancer action of melatonin was suppressed, thereby allowing cancer cells to multiply (J Pineal Res, 1993; 14: 89–97).

A leaked draft report on EMF exposure guidelines for extremely low-frequency electric and magnetic fields by the US National Council on Radiation Protection tacitly acknowledged the danger: "Disturbance of the normal diurnal melatonin rhythm is associated with altered oestrogen receptor formation in the breast, a line of experimental evidence now under study for possible links between ELF field exposure and human breast cancer".

EMFs

In the light of mounting evidence, everyone—but particularly women—should reduce their exposure to EMFs both at work and in the home.

Sit at least four feet from the sides and rear of VDUs (where the highest fields are emitted). In the home, the major source of elevated fields of exposure is usually the bedroom. If you already have breast cancer, you might be well advised to check the levels of magnetic fields in your bedroom overnight.

Household power linked to cancer

As well as the dangers from external sources, ordinary household electrical gadgets—vacuum cleaners, ovens and food mixers—can also cause cancer.

A leaked report, prepared for the US government's radiation advisers, recommends safety limits for exposure to EMFs that are 5000 times lower

than international safety levels and 8000 times lower than the current British ones.

The National Council on Radiation Protection says that EMF exposure should never be higher than 0.2 m T. If introduced, most household gadgets would be considered unsafe: vacuum cleaners and drills, for example, have a range of between 2 and 20 m T; food mixers between 0.6 and 10; hair dryers between 0.01 and 7; dishwashers between 0.6 and 3; washing machines between 0.15 and 3; and electric ovens between 0.15 and 0.5.

When these appliances are switched off, general household levels of EMF are considered safe, unless the home is within 25 metres or less of a power line. If a 400 kV line is 25 metres from the home, this will increase general EMF levels to 8 m T.

The report, prepared by an 11-man committee over nine years, also points to research showing that exposure to even weak EMFs can affect the production of melatonin, and makes the possible link with breast cancer.

Ultraviolet A radiation

Long-term exposure to ultraviolet A radiation has been shown to cause skin cancer. Psoriasis sufferers who are treated with ultraviolet A radiation therapy may simply be swapping one skin condition for another far more serious. If they have had more than 250 treatments, their risk of developing skin cancer increases nearly nine times. The risk worsens with the length and frequency of treatment.

Patients seem to be at no more risk than the general population of developing malignant melanoma during the first 15 years of treatment. After that, however, the risk rises alarmingly to 5.4 times during the following five years and to 8.9 times if the patient has had more than 250 exposures to PUVA (psoralen plus ultraviolet A radiation).

Researchers from Harvard Medical School tracked 1380 psoriasis patients who were first treated with the ultraviolet A radiation therapy PUVA in either 1975 or 1976.

PUVA has become a mainstay treatment for severe psoriasis since its introduction in the mid-1970s. Although it was known to cause skin cancer, it was always associated with skin type, the cumulative load of ultra-

violet A radiation and earlier cancer-causing treatments. The Harvard study is the first to observe that the risk worsens over time.

In an accompanying editorial, Klaus Wolff from the University of Vienna said that medicine needs to decide whether PUVA treatment should be stopped "since the death of a single patient with melanoma outweighs any other benefits that may be derived from such treatment." Dr Wolff concluded that the treatment should continue, although patients given long-term PUVA therapy need to be carefully observed throughout their lives (N Engl J Med, 1997; 336: 1041–5).

Ultraviolet (UV) light

An intriguing potential cause of non-Hodgkin's lymphoma (NHL) is exposure to UV light—as used by sunbeds, or for treating psoriasis and other skin diseases. Because there is a close link between NHL and skin cancer, scientists suspect that UV light—long associated with skin cancer because of its immunosuppressant effects—may also be a cause of lymphoma.

To test the theory, researchers at University Hospital in Uppsala, Sweden and the Danish Epidemiology Science Centre in Copenhagen studied 113,010 patients who had various skin cancers and lymphomas (BMJ, 1995; 310: 1491– 5). (In both countries, the rate of NHL has been rising at a rate of two to four per cent per year.) They found a strong association between NHL and skin cancer, with the risk of NHL increased twofold if skin cancer had already been diagnosed. They concluded that exposure to UV light may have contributed to the recent increase in NHL.

More interesting is the evidence of a link between NHL and sunlight. Researchers in Sweden found that the risks for NHL increased, the further south individuals resided (Int J Cancer, 1999; 80: 641–5). Not surprisingly, Caucasians are most affected by UV exposure. There is some evidence that migration from one latitude to another (sunnier) climate can increase the risk (Br J Cancer, 1996; 73: 945–50).

Sunbathing

Is skin cancer caused by too much sunbathing? This much-cherished view has been challenged by researchers from Yale University. They found a link

between sunburn and a melanoma that may form later at the exact same spot, but not with the position of any other tumour. They were unable to explain why such a number of melanomas form on parts of the body that are rarely, if ever, exposed to the sun (Int J Cancer, 1996; 67: 636–46).

Much of what we're told about the dangers of sunbathing is wrong. Sunscreens may, in fact, increase the risk, while advice on keeping out of the sun seems to be too simplistic.

Studies show that there is a melanoma epidemic going on; in New South Wales in Australia, for example, cases have doubled in the past two years, while other surveys have shown a rise of up to 43 per cent a year. And all this at a time when public awareness of melanoma, and ways to supposedly prevent it, couldn't be higher.

The fact is that the medical profession knows very little about melanoma, but what it does know does not bear out the advice generally handed out. For example, scientists know that people who are constantly out in the sun are less likely to develop melanoma than those who go out in it only intermittently, and there seems to be an important interaction between skin type and the disease.

Scientists don't know which part of the sun's rays is responsible for bringing on the disease, or the role and importance of ultraviolet radiation in tumour growth. Without this knowledge, sunscreens are useless and actually may be responsible for bringing on the cancer in some cases.

One researcher who has studied the latest epidemic in New South Wales is suggesting that there could be two types of melanoma: one which is responsible for the thin lesions which can be easily removed, and a second form which generates thicker lesions and which may be preexisting. In other words, they were there irrespective of sun exposure. If this supposition is accurate, it would only mean that melanoma follows the pattern of other, better-understood, cancers where most skin cancer cells prove to be harmless and may even regress (BMJ, January 20, 1996).

Drugs

Besides environmental causes, many medical treatments are being implicated as contributing to the cancer statistics. The latest evidence points to

a number of drugs which appear to be carcinogenic.

Cholesterol drugs

Cholesterol-lowering drugs may cause cancer, a possibility that doctors and regulators would have been aware of had they read the research properly.

Scientists from the University of California have re-analysed the data published in *The Physicians' Desk Reference*, the American drug reference bible, and discovered a definite link between most of the popular cholesterol-lowering drugs and cancer. Tests carried out on rodents show the carcinogenic effects of the drugs, especially if taken longer-term.

Their findings cast a shadow over the millions of users of the drugs around the world. They are some of the most popularly prescribed drugs; their usage has increased 10-fold in the past decade and, in 1992 in the US alone, 26 million prescriptions for the drugs were written out.

The Californian researchers, Dr Thomas Newman and Stephen Hulley, fear that modern medicine may be preparing a massive cancer time bomb, its effects not fully realised for another 30 years. Despite this, the researchers conclude that the benefits of the drugs outweigh the cancer risks among those with high blood cholesterol, especially men—provided they have taken the drug for less than five years. Those not at high risk from raised cholesterol levels should avoid the treatment, the researchers advise, particularly if they have a life expectancy greater than 20 years.

But if all these risks were already in the data submitted to the US FDA, how did the drugs get approved in the first place? The California researchers note that the drugs were approved on the basis of less than 10-year clinical trials, yet the full effects of the drugs may not become clear for 30 years.

The carcinogenic effects of two of the drugs, lovastatin and gemfibrozil, were discussed in a drugs advisory committee meeting. The drug manufacturer representative of lovastatin "downplayed the importance of the studies," the researchers say. The data were also prepared in milligrams per kilogram of body weight, which may have confused the committee.

After these revelations, the committee recommended that gemfibrozil

should be used only as a drug of last resort, after exercise, diet and weight loss had failed to bring down cholesterol levels. The popularity of the drug since then suggests it has been far more widely used than the committee wanted (JAMA, January 3, 1996).

Fertility drugs

Fertility drugs are some of the latest medications to be associated with cancer, specifically, of the ovary and breast.

In the US, at least 12.5 million courses of fertility drugs have been prescribed since they were launched in the 1960s. In January 1993, the US FDA asked drug manufacturers to add the risk of ovarian cancer to the possible adverse reactions listed on fertility drug labels such as clomiphene citrate (Clomid) and menotropins. The decision was prompted by an evaluation of the results of 12 studies (analysed by the American Collaborative Ovarian Cancer Group based at Stanford University, California, and published in the American Journal of Epidemiology) on risk factors for ovarian cancer. These found that the risk of invasive ovarian cancer among infertile women who had taken fertility drugs was almost three times that of fertile women, and that infertile women who had not taken fertility drugs had no increased risk (Lancet, 1993; 341: 234).

The link between fertility drugs and ovarian cancer is in keeping with the two main theories regarding the possible causes of ovarian cancer. The first is that the surface of the ovaries are damaged each time a woman ovulates and that this may eventually trigger the cancer. Therefore, by increasing ovulation, fertility drugs are increasing a woman's risk of developing cancer. The American study also revealed that women who ovulate less often—through having a number of pregnancies and breastfeeding their children or by taking the contraceptive pill, which prevents ovulation, for example—are at less risk of ovarian cancer. The second theory is that exposure to high levels of pituitary gonadotropins (which clomiphene stimulates the release of) increases the risk of ovarian cancer.

Ovarian cancer is the fifth most common cancer in women and, because it is not usually discovered until it is in an advanced state, most women die from it. It is also most common in women over 50, and three times more

common in women who have never had children. So we may only just be starting to see ovarian cancers caused by fertility drugs taken by women in the 1960s. As more and more women receive treatment for infertility, there may be an increasing number of cases of ovarian cancer over the ensuing decades.

One study found that women taking clomiphene ran an increased risk of ovarian tumours whether or not they had ovarian abnormalities. They discovered 11 invasive or borderline-malignant ovarian tumours compared with an expected 4.4. Nine of the women had taken clomiphene. Their results also indicated that the risk of a tumour is dependent on the length of time a woman takes the drug. Those who had taken clomiphene for less than 12 menstrual cycles were at no increased risk whereas those who had used it for 12 or more cycles were at considerably increased risk, according to the researchers.

However, the study found no increase in the risk of ovarian tumours associated with the use of human chorionic gonadotropin, which stimulates the ovaries to produce oestrogen and progesterone, although it may also induce ovulation. Although the findings suggested that prolonged use of clomiphene increased the risk of ovarian tumours, larger studies are needed to test the hypothesis (N Engl J Med, 1994; 331: 771–6.)

The French are currently conducting a large-scale epidemiological study to determine the risk of ovarian cancer in women treated with ovulation-inducing drugs. There are about 3200 deaths from ovarian cancer every year in France and about 4000 new cases (Lancet, Oct 22, 1994).

Blood pressure drugs

New research suggests that calcium antagonists, given to treat hypertension (high blood pressure), cause cancer. They have already been blamed for increasing heart attack risk and causing stomach bleeding.

The new finding was made by researchers in the US and Italy, who tracked 750 elderly patients treated for hypertension for four years. Those who were taking calcium antagonists suffered a rate of cancer double that for the other groups, who were prescribed ACE inhibitors or beta-blockers (Lancet, 1996; 348: 49).

Several classes of drugs—including diuretics and antihypertensives (for lowering high blood pressure)—are suspected as being possible causes of cancer of the kidney. A new study has reexamined a number of possible causes, and included information from seven studies that linked various cancers to high blood pressure.

The possible link between hypertension and cancer was first mooted in 1975, but has never been confirmed. Diuretics were suspected as being a cause of renal (kidney) cancer in 1992, but larger trials have not confirmed this.

Another suspect has been the beta-blocker atenolol, when it was noted that cancer was twice as common in hypertensive sufferers taking the therapy. Antihypertensive drugs have also been pinpointed as a possible cause of renal cancer in several studies (Hypertension, 1996; 28: 321–4).

Surgery

Breast surgery

Although surgery for cancer is touted as being the first port of call in cancer treatment (see p 78), it also appears to increase the risks of the disease spreading. Surgery for breast cancer also increases the risk of relapse or death within three years following the procedure, according to UK cancer specialist Michael Baum.

Mr Baum, based at the Royal Marsden Hospital in London, said that women who have surgery for breast cancer are not necessarily in the clear if they survive the initial three years. Relapse or death can recur years later, although it is a less dramatic peak the second time, he said. This goes against the current thinking that suggests that the disease continues to develop at a constant rate (Lancet, January 27, 1996).

Vasectomies

Whether it's artificial hormones to stop women becoming pregnant or vasectomies for men, tinkering with the body's reproductive ability seems to increase cancer risk. Men who have had vasectomies are more likely to develop prostate cancer, according to two US studies of more than 73,000 men (Lancet, February 20, 1993).

Researchers found that the likelihood of prostate cancer increased with the length of time since the operation. They speculate that the cancer may be triggered by the reduction in the secretion of prostatic fluid that follows vasectomy or that the immune system may be compromised by the operation and, therefore, less able to ward off cancer.

Transplants

Bone-marrow transplants—often used to treat leukaemia and other malignant diseases—dramatically increase the risk of cancer. The risk can increase by as much as 8.3 times for people who have survived the transplant for 10 years or longer, while children who had transplants before they were 10 years of age face the greatest risk of all.

Overall, the risk is greater the younger the patient when he had the transplant. Researchers feel the risk may be linked to the amount of radiation therapy the patients received before having the transplant.

The research team which produced these results, from the National Cancer Institute at Bethesda, Maryland, studied the records of 19,229 patients given bone-marrow transplants between 1964 and 1992. They found that 80 had developed a new cancer, compared with an expected 29.8 cases from the general population (N Engl J Med, 1997; 336: 897–904).

Stress

Breast cancer link

Major stress—possibly sparked by a bereavement, job loss or divorce—can cause breast cancer. Risks of developing breast cancer increase by almost 12 times if a woman has suffered stress in the previous five years.

Surprisingly, women who confront problems and try to work them out are three times as likely to suffer breast cancer as those who have an emotional response to their troubles.

Other risk factors, but ones considered of lesser importance by the researchers, included smoking and being postmenopausal. They found no evidence that environmental factors had any significant part to play.

This is a landmark piece of research as it is the first time researchers have been able to scientifically prove what many have suspected for a long time.

A team of English and Chinese psychiatrists, radiologists, surgeons and cancer specialists, led by Dr C. Chen from the National Cheng Kung University Medical School in Taiwan, interviewed 119 women, aged between 20 and 70, who had been referred to King's College Hospital in London with a suspicious breast lump.

By questioning them, and assessing stress levels and other factors, they were able to show that women were more than three times as likely to develop breast cancer five years or less since suffering stress. This figure leaped to 11.6 times when adjustments were made for other factors such as age and the menopause (BMJ, December 9, 1995).

Nutrition

There is no doubt that diet has one of the greatest roles in causing—or preventing—cancer (see p 132). Numerous studies have shown that too little or too much of certain nutrients can play a role in causing disease.

Cervical cancer

For instance, certain nutritional deficiencies can boost the chances of developing cervical cancer in a woman already at risk of the disease.

According to a multidepartmental study at the University of Alabama at Birmingham, women deficient in folic acid were more likely to develop cervical abnormalities if other risk factors—number of sexual partners, use of the Pill, smoking or infection with human papillomavirus infection—were present. In particular, a low level of folic acid increased a woman's chances of developing cervical abnormalities by five times (JAMA, January 22/29, 1992).

Vitamin K

Vitamin K—often routinely given to newborn babies—has been linked with some childhood cancers. Newborns have extremely low levels of vitamin K—which helps with blood-clotting—in their blood or stored in their liver. Doctors believe that, unless vitamin K levels are artificially raised, babies could be at risk of developing potentially fatal vitamin K deficiency bleeding, also known as haemorrhagic disease of the newborn (HDN).

Those considered most at risk include premature babies, those having forceps delivery, 'difficult' caesarean sections, those with liver disease or those born to mothers taking anticonvulsant or other medication that inhibits blood from clotting.

Conventional wisdom has it that exclusively breastfed babies risk vitamin K deficiency because breast milk is low in in this nutrient. According to active-birth pioneer and primal health researcher Michel Odent, this is only half right. True breast milk is low in vitamin K, but colostrum, which is secreted for a few days after birth, is very vitamin K-rich. One reason that babies suffer from HDN, he suggests, is that they are not put to the breast immediately after birth. In many parts of the world, hospitals still advise mothers to dispose of colostrum until the 'real' milk comes in.

The widely reported study by Dr Jean Golding, conducted at the Institute of Child Health in Bristol, England (the results of which were reproduced by Golding in a later study), show that babies receiving intramuscular (injected) vitamin K were twice as likely to suffer cancer as those receiving none (BMJ, 1992; 305: 341–6). This increased risk translates into 1.4 extra cases of cancer per 1000 children by age 10.

All babies have a risk of HDN of 0.0086 per cent. However, according to Golding's research, giving your child a vitamin K shot increases his cancer risk to 0.14. In other words, by injecting vitamin K, your baby may be 16 times more likely to get cancer than he was to get HDN.

Although the Golding results have not yet been reproduced anywhere else, and population studies in the US and Denmark have failed to find an increase in childhood leukaemia after widespread use of injected vitamin K, there are several plausible theories as to why it may pose a cancer risk.

Golding and her colleagues pointed to experiments showing changes in chromosomes with high concentrations of vitamin K. Animal studies have also shown chromosomal damage after vitamin K injections. So, the cause may not be the vitamin *per se*, but one of the components of the injectable preparation which could be reacting with the vitamin to cause cancer.

Another experiment they cited suggested that a slight deficiency of vitamin K could actually protect against tumour growth. Or it could be that the injection itself is the problem because it exposes newborns to foreign

substances such as viruses, which may trigger cancer (BMJ, May 16, 1992).

Food allergies

Scientific evidence suggests a link between some cancers and food allergies or sensitivities. The central question is whether food allergies protect people from cancer or predispose them to it.

William McWhorter, of the US NCI, has studied the link extensively and reported that 13 such studies found allergy to be protective and two found it to be a risk factor.

In the 1971–1975 First National Health and Nutrition Examination Survey of 6108 adults, there was a highly significant positive association between the history of any allergy and the development of any cancer. Even after controlling for factors such as age, sex, smoking and race, there was a strong association between allergies expressed as hives, and lymphatic malignancies (Cancer, 1988; 62: 451–5).

One explanation is that, although allergies stimulate the immune system and thus may be protective, in the long term, such sustained 'allergic stress' may lead to an exhausted immune system. One finding in the McWhorter study supports this: the most protective effect was found in the youngest adults surveyed—those 25–34 years old—who had a 0.7 per cent risk of developing cancer (Cancer, 1988; 62: 453).

Other links have been made between coeliac disease and NHL. In the textbook *Modern Nutrition in Health and Disease* (Philadelphia: Lea & Febiger, 1980: 1177), Maurice Shils reported incidences of intestinal lymphomas in coeliac patients ranging from 6.2 to 10 per cent in three studies.

Shils remarks, "Males above 40 years of age with longstanding coeliac syndrome who are not eating a gluten-free diet are a major risk group."

High-fat diets

Besides inappropriate doses of nutrients, the wrong ratio of fats, carbohydrates and proteins can predispose to cancer. Scientists have proved a link between high-fat diets and colon cancer, for instance, an association long-suspected by researchers. Molecular scientists are discovering a complicated interaction between genetic and environmental factors which causes

colon cancer, and which may point the way to other malignancies as well. It would also explain why some members of the same family, who are all presumably eating the same diet, are more susceptible to cancer than others.

Scientists from the Jefferson Cancer Institute in Philadelphia have discovered that the difference may lie in 'modifier' genes, whose interaction with mutant genes can determine whether someone will develop cancer or not. The modifier genes were found to be identical to a gene that instructs intestinal cells to produce an enzyme involved in fat digestion. The scientists suggested that high levels of this enzyme in the intestine in some way counter potentially harmful effects of dietary fatty acids.

Scientists have also discovered that other cancers—such as lung and bladder—have patterns of repetitive so-called 'junk' DNA, which may serve as a marker for malignancies (JAMA, August 2, 1995).

Non-Hodgkin's lymphoma (NHL) in older women may be associated with a high-fat, high-protein diet, according to a recent study.

An increased risk for NHL was found in a study of more than 35,000 healthy Iowa women aged 55–69 years (JAMA, 1996; 275: 1315–21). The researchers found that the higher the intake of animal fat, saturated fat, monounsaturated fat (such as olive oil) and red meat (especially hamburger), the higher the risk of developing NHL.

Unlike the results of other studies, no association was found between NHL and milk or other dairy products.

On the positive side, the study clearly showed that high consumption of cruciferous and carotene-rich vegetables, and all types of fruits had a protective effect.

Brian Chiu and his co-authors speculated that excessive intake of fat and protein may induce chronic hyperstimulation of the immune system, making it unresponsive—and possibly leading on to the development of cancers like NHL.

More recently, as part of the ongoing Nurses' Health Study at Harvard, more than 88,000 women have been followed for 14 years. Researchers found that the greatest increase in risk—nearly two and a half times—was associated with transunsaturated fat intake, not saturated fats.

High intake of beef, pork or lamb as a main dish (not as a mixed dish or in sandwiches) more than doubled the risk of developing NHL over intake of these meats less than once a week (J Natl Cancer Inst, 1999; 91: 1751–8).

The role of meat

Western diets are high in fats compared with Oriental ones, and there is a 20-fold difference in colorectal cancer incidence between East and West. Consequently, fats have been suspected as the main culprit in colorectal cancer.

But the scientific evidence is by no means clear-cut. A large-scale report, *Food, Nutrition and the Prevention of Cancer*—the result of three years of work by 2250 scientists evaluating 4500 research studies—implicated meat itself in colon and rectal cancer (Am J Epidemiol, 1990; 132: 783).

Yet, in a more recent survey of the epidemiological evidence to date, nutritionists at Harvard Medical School could find no link between total fat intake and colon cancer. They reported that "red meat or beef has been related to colon cancer risk in most studies, whereas dietary fat from sources other than red meat, including dairy, poultry and vegetable oils, does not increase the risk of colon cancer". However, the Harvard researchers said that the risk didn't seem to be caused by its total fat content.

This suggests, they wrote, "that other factors such as heterocyclic amines formed during cooking may be critical" (Am J Clin Nutr, 1997; 66: 1564S–71S). However, a more recent large-scale US study could find no correlation with cooked meats, but it did uncover a weak link between processed meat and increased risk of colon cancer (Cancer Epidemiol Biomarkers Prev, 1999; 8: 15–24).

Dehydration

The experience of People Against Cancer suggests that most cancer patients suffer from chronic low-level dehydration. This is a particularly important consideration in cases of NHL since the lymphatic system balances all the body's fluids.

Just drinking more water, however, may not be the answer. According to PAC founder Frank Wiewel, "Drinking tap water contaminated with fluo-

ride, chloride, various pesticides and the byproducts of industry may actually increase your cancer."

Therefore, PAC believes strongly not only in purifying water, but also in optimising its pH. "In treating NHL, it is often simply enough to introduce a pure source of alkaline fluids," says Wiewel.

One way to do this is to buy alkaline bottled water (high in minerals). However, the mineral particles are often not well absorbed. Another way is to increase your intake of natural vegetable and fruit juices, which contain high levels of highly alkaline water in an easily assimilated form.

PAC also recommends investing in an alkaline water ioniserr, which electrically splits the water molecule to make alkaline (containing sodium, potassium, magnesium and calcium) and acid (containing chlorine, lead, suphur and phosphorus) water. (PAC recommends the Ioniser Plus system, although other brands are effective.)

Hair dye

Long-term use (more than 10 years) of hair dye, particularly dark brown or black, may be increasing your risk of NHL and multiple myeloma anywhere from two to four times (Cancer Causes Control, 1999; 10: 617–25; J Natl Cancer Inst, 1994; 86: 210–5; Am J Public Health, 1992; 82: 1673–4).

Some recent studies have found no increased incidence (J Natl Cancer Inst, 1994; 86: 1466–70; Am J Public Health, 1998; 88: 1767–73). Nevertheless, some researchers believe that hair dyes may account for as many as 20 per cent of all cases of NHL in women. It is probably no coincidence that hair-dye manufacturers now cover themselves by labelling their products with a caution if they contain toxins such as phenylenediamines

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Clothes

Even the clothes on your back—or front—may be linked with cancer. Tentative links have been made between cancer and some of the newer man-made fabrics or those treated with chemicals.

Bras

Wearing bras has been linked with breast cancer. Two medical anthropol-

ogists have concluded that women who wear a bra for 12 hours or longer every day are 19 times more likely to develop breast cancer than those who wear one for less than 12 hours. And women who wear a bra virtually all the time, even to sleep in, are 113 times more likely to develop cancer than women who wear theirs for less than 12 hours a day.

Sydney Ross Singer and Soma Grismaijer base their controversial findings on interviews with 4700 women from five US cities. The reason, they believe, is due to the way a bra artificially restricts the lymphatic system from flushing accumulated wastes from the body, thereby causing toxins to gather in the breast tissue. This, in turn, forms a breeding ground for a host of health problems, including cancer (Townsend Lett Docs, February/March, 1996).

Dr Robert Blomfield of Hebden Bridge, West Yorkshire—a *What Doctors Don't Tell You* reader—has been suspicious of this connection for many years. He advises women to wear cotton bras as he thinks it may be the synthetic material that compounds the problem: "I have written to the Imperial Cancer Research Fund about this. Unfortunately, I was informed that the ICRF has no intentions of carrying out any research," he says.

Pyjamas

The US government has banned the sale of pyjamas that contain TRIS (tromethamine), a fire-retardant chemical, after it was found to cause kidney cancer in animals.

Although we don't know if the chemical can cause cancer in children, we do know that children are absorbing it through their skins. One doctor found high levels of TRIS in children's urine and fat cells, even when the pyjamas had been washed several times.

Up to 51,000 American children could be carrying TRIS in their systems and, while none has yet gone on to develop cancer, the chemical tends to be very slow-acting (Townsend Lett Docs, June 1996).

Chapter 2
Detection

Hiding behind screens

The medical profession would have us believe that universal screening programmes—by catching the disease 'in time'—will prevent cancer. This notion is all the more seductive because various cancers among women are reaching epidemic proportions.

At the moment, women are the primary targets of these regular tests, mainly for cervical and breast cancer, although there has been talk of prostate and bowel cancer screening programmes for men. Although cervical screening and mammography have been in place for years in the US, the UK has only recently begun wholesale breast and cervical cancer screening; from 1991, three-quarters of eligible groups had been screened. However, behind the publicly voiced confidence in screening lies privately admitted doubt.

Despite all the money being poured into massive screening campaigns, no screening programme anywhere is having the slightest impact on cancer mortality. In fact, because of the high potential for false positive readings—where people are told they have cancer when they don't—screening may only be increasing the number of patients mutilated through unnecessary drug treatment or surgery.

The medical literature has been awash with studies on both sides of the Atlantic demonstrating that some screening campaigns have no value. A study, from the University of British Columbia in Vancouver, even recommends junking mammograms altogether. They came to their conclusion after studying all the earlier trials claiming a 30 per cent reduction in deaths from breast cancer for women over 50 who've been screened. This 30 per cent risk-reduction has been adopted as a mantra by the medical profession. It has been used to justify screening of other groups, such as women under 50, where no benefit has ever been shown.

Medicine's blind faith in screening was neatly illustrated by 'Minerva', a columnist in the British Medical Journal, who cheerily admitted that there is "little hard evidence", but plenty of "sound reasons" for believing that screening for those over 65 is useful.

As age is the most important risk factor for the disease, and 65-year-olds may go on to live another 12 years, Minerva figured, it's *got* to be good for them (BMJ, May 8, 1993).

There has been far less publicity, the Canadian researchers remind us, of all the studies that have been done since those early days showing that mammography does no good for anyone in any age group, but does great harm through false-positive results and get-in-there-early intervention.

"Since the benefit achieved is marginal, the harm caused is substantial and the costs incurred are enormous, we suggest that public funding for breast cancer screening in any age group is not justifiable," the epidemiologists concluded.

It's hard to get any more damning than that, or than the Bristol study of a quarter of a million women showing that cervical screening is a dangerous waste of time.

Cervical screening

The most widespread screening test is the Pap smear, so-called after Dr George Papanicolaou, who first developed it. In 1941, Papanicolaou and a colleague published a study demonstrating that malignant changes in the cervix could be diagnosed by examining cells taken from the vagina.

This simple, relatively painless, test involves scraping a small sample of tissue from the neck of the womb and analysing it for unusual cells. It was first adopted in various Western countries after publication of the results of the pilot screening programme in British Columbia showed that it was having an impact on lowering mortality.

Under the UK's current screening programme, some three million smears are performed every year at an estimated cost (if doctors, nurses and lab time is included in the total) of £10 to £30 per woman screened.

Although there wasn't an overall national government policy until recently, most doctors in the UK regard cervical cancer screening as part of

standard good practice, recommending that all women between the ages of 20 and 65 repeat the test every three to five years. An article in The Lancet (January 13, 1990) recommended that screening be extended to women over 65, now considered a high-risk group.

There is now a financial incentive for doctors to persuade women to have regular smears. If more than 50 per cent of the women on their lists receive the tests, they are paid a bonus; the bonus is tripled if 80 per cent take it.

Of course, no one would quarrel with the benefits of a simple, painless, risk-free test that promises to eradicate a common killer of women, *if it actually worked*. The problem is, there is no convincing evidence anywhere to suggest that it does.

Professor James McCormick, of the Department of Public Health at Dublin's Trinity College, is an expert on mass screening tests and has studied much of the available medical literature on the subject. He concluded: "There is no clear evidence that this screening is beneficial, and it may well be doing more harm than good" (Lancet, July 22, 1989).

By harm, he means that many thousands of women are being subjected to risky treatments that could affect fertility, or worse, for a condition they do not have or which might right itself if left alone. The smear test has also never been proven to save lives in any country where it has been introduced. In fact, every study shows that it is making virtually no impact. The only area in Canada where screening has been universally adopted is British Columbia; nevertheless, the death rate of cervical cancer there matches the death rate of the rest of the country (Mod Med Can, 1973; 28: 6067–9).

In the UK, the annual death rate from cervical cancer fell before the test was introduced and has stubbornly remained at 2000 (although lately, the government has said that the annual figure has dropped by 300).

In the UK and US, mass screening programmes, like the National Cervical Screening programme, have been mounted without a consistent nationwide policy about when or whom to screen, or how to follow-up abnormalities. Every large study of the programme has revealed a decided lack of consistent standards.

Mounting evidence suggests that the smear campaign may be based on

a faulty assumption: that abnormal, or 'precancerous', cells in the cervix lead to cancer. The assumption has been inferred from two facts: cervical cancer progresses slowly and, if caught early enough, can be cured.

There are four categories of abnormal lesions or cervical interstitial neoplasia: CIN I, II, III and cancer. What we don't know is whether the early lesions —those in the CIN I and II categories—will go on to develop into cancer. Professor McCormick cites a study published in the British Medical Journal examining the accuracy of cytological (cell) screening. The study demonstrates that some 10 per cent of women screened have cervical abnormalities, "most of which," he notes, "would not progress to cancer" (*Follies and Fallacies in Medicine*, Tarragon Press, 1989).

The medical profession doesn't really understand the usual progression of this kind of cancer—something it has only tacitly begun to admit. Some cervical cancers appear to regress if left alone, while others progress so rapidly that the three-to-five year gap recommended by most screening programmes would fail to pick them up in time. On this fragile foundation, women with an abnormal smear are frightened and stigmatised by the term 'precancerous' when no one knows whether that description is appropriate or not.

A 1988 study showed that nearly half of smears with mild abnormalities reverted to normal within two years. None of the patients developed invasive cancer during long-term follow-up (BMJ, 1988; 297: 18–21). A recent Canadian study showed that simple inflammation of the cervix may throw up an abnormal smear.

Besides the problem of not understanding the significance of results, the test is also so inaccurate as to be virtually pointless. There is no guarantee that a Pap smear will pick up the fact that you have cancer and there is a fair likelihood that you will be given a false positive—that is, told you have an abnormality that doesn't actually exist. In one study (published in The Lancet, January 13, 1990), the authors admit to false-negative rates of between seven and 60 per cent—which is more alarming because these are cases where the result should have been positive, but weren't.

The conventional treatment for early 'precancerous' lesions employs colposcopy (a magnifying glass with a built-in light source) and biopsy,

diathermy (burning the abnormal cells) or cryotherapy (which employs a freezing probe to freeze-kill the outlaw cells). These procedures can all cause haemorrhage or permanently damage the cervix, resulting in an 'incompetent' or narrowed cervix and, thus, affecting a woman's chances of carrying a baby to term.

Cervicography

Some quarters are quick to promote cervicography as an alternative to the Pap smear. The technique involves having your cervix painted with a weak solution of vinegar, which will stain any abnormalities white, after which a photograph—a cervicogram—is taken.

Although initial reports show that the technique is more accurate than the Pap smear, other reports say that this is only because the test produces even more false positives than the Pap smear. Cervicography was shown to have a failure rate of 10 per cent in a study performed at London's Marie Stopes clinic (Br J Obstet Gynaecol, March, 1991). It also came up with abnormalities in 19 per cent of the 1162 women tested compared with one per cent of those receiving routine smear tests. Dr Elizabeth Hudson, President of the British Society for Clinical Cytology, said the method had been ruled out for mass screening because of a high rate of false positives.

Mammograms

The other area of screening being stepped up sharply is mammography, an x-ray of the breast designed to pick up early malignancies.

Breast cancer, the number two cancer killer after lung cancer, claimed the lives of an estimated 46,000 American women in 1993, the latest year for which figures are available. England and Wales, though, have the worst breast cancer death rates of 50 Western nations, with 29 per 100,000 of the population dying from the disease.

In the US, Congress responded to pressure by breast cancer activists by ordering the National Institutes of Health to increase spending on breast cancer by nearly 50 per cent—to some $132.7 million. In the UK, the government launched its National Breast Screening Programme in 1990, offering mammography to women aged 50–64 and, in its first year, exceeded its

target of screening 70 per cent of the million women invited to participate every three years.

The American College of Obstetricians and Gynecologists also has called for more mammograms among women over 50. However, constant screening still can miss breast cancer. Mammograms are at their poorest in detecting breast cancer when the woman is under 50 and when the time between screenings is about two years.

Equally worrying, the test is also poor at detecting cancers in women who have a family history of breast cancer, possibly because of rapid tumour growth.

Researchers from the University of California confirmed the doubts that several international health boards have about the benefits of screening among the under-50s. The research team believe that mammograms are better at detecting cancerous growths in the over-50s because their breasts are more fatty. But their other findings, made after studying the records of 28,271 women aged over 30, give greater cause for concern. Paradoxically, those at highest risk because of their family history seem to be helped least by mammography (JAMA, 1996; 276: 33–8).

Following the results of a Swedish review, which pooled the results of five studies covering some 300,000 women, the Medical Establishment has adopted as gospel its results that, for women 50 and over, regular screening can reduce breast cancer mortality by 30 per cent. However, it is also generally agreed that no studies have shown a benefit for women younger than 50 (Lancet, 1993; 341: 1509–11).

Top breast cancer specialists Ismail Jatoi and Michael Baum, of London's Royal Marsden Hospital, wrote a special feature that labelled American doctors giving mammograms to the under-50s "negligent" because it can often do more harm than good (BMJ, 993; 336: 1481–3). But even among the over-50s, there is no conclusive evidence that mammographic screening is doing any good.

In the much-quoted Swedish overview, the researchers came up with their figure by pooling the results from three bands of age groups—the 40–49 year olds, 50–69 year olds and 70–74 year olds—into one analysis. Although the study showed a positive benefit (29 per cent reduction in

mortality) among the 50 year olds, there was no significant benefit among the 40 or the 70 year olds.

But findings from another Swedish study provide a potent argument against the recommendation of the Swedish health authorities that all women aged between 40 and 74 years should be screened between every 18 months and two years (BMJ, 1996; 312: 273–6). The cost of treating women who have had a false-positive result (detecting cancer where there is none) is a third of the cost of providing screening for all women, they discovered.

Research has never before looked into the anguish, and the cost, involved for the women wrongly told they have breast cancer. Researchers from South Hospital in Stockholm monitored 352 women who had false-positive readings. They made 1112 visits to doctors, had 397 biopsies, 187 follow-up mammograms and 90 surgical biopsies before being pronounced clear of cancer. Even after six months, only 64 per cent had been given a clean bill of health.

The process cost £250,000, and women under the 'danger age' of 50 accounted for 41 per cent of these costs.

Researchers point out that these costs, extrapolated out, account for a third of the total cost of providing screening in the first place.

When you actually examine the statistics and science behind them, the original Swedish overview is the only study to show clear benefit even among the 50s. The 30 per cent improvement in survival being bandied about by the medical profession may also derive from several articles which have looked at all the studies of screening; although most studies did not show a clear benefit, the articles concluded that those that were most scientific, or 'randomised' (that is, where women were randomly assigned to either screening groups or controls), all proved benefit (BMJ, 1991; 302: 1084).

However, James McCormick and the late Petr Skrabenek, scourges of unproven medical practice, point out that three of the four randomised, controlled trials "failed to reach statistically significant benefit for women aged 50 and over" (BMJ, 1991; 302: 1084).

Because we know that survival from breast cancer correlates with the

size of the tumour, the rationale for screening is that the earlier you catch it, the smaller the tumour will be, and hence the greater your chances of beating the disease. However, Johannes Schmidt, an epidemiologist in Switzerland and long-standing critic of mammography, says that this rationale doesn't take into account that cancer doesn't always grow at the same rate (Lancet, 1992; 339: 810).

The Lancet admitted, in a no-holds-barred editorial that, despite all the treatments and screening, the number of women dying from the disease refuses to go down: "Let us stop complaining that screening ought to work if only we tried harder and ask why this approach is so disappointing," it said (Lancet, February 6, 1993).

One reason may be that mammograms actually increase mortality. In fact, numerous studies to date have shown that, among the under-50s, more women die from breast cancer among screened groups than among those not given mammograms. The results of the Canadian National Breast Cancer Screening Trial published in 1993, after a screen of 50,000 women between 40 and 49, showed that more tumours were detected in the screened group, but not only were no lives saved, but 36 per cent more women died from breast cancer in the group first offered screening (Can J Public Health, 1993; 84: 14–6). Similar results occurred in three Swedish studies and also in those conducted in New York.

This higher mortality figure may reflect the fact that mammography is indiscriminate, picking up many cancers which would do no harm if left alone. Schmidt suggests as much when he points out that mammography increases the incidence of breast cancer by one-quarter to one-half. This has two implications: the first is that these excess cancers, which are found to be benign, actually improve the survival statistics among the screened population of a test. Schmidt also estimates that mammography is ten times as likely to pick up a benign cancer (and probably overtreat it) as prevent a single breast cancer death.

In one study at the Departments of Radiology and Surgery at the Brighton and Women's Hospital at Harvard Medical School, of 1261 cases, only 26.1 per cent of the mammograms recording some abnormality were found to be malignant tumours; at other radiology departments referring

patients to the Harvard centre, this figure was even worse—an average of 16.7 per cent.

Dr Michael Swift, chief of medical genetics at the University of North Carolina, demonstrated in a study of 1600 women that moderately strong x-rays raised the risk of breast cancer five or six times in women who carry a certain gene, found in about one per cent of the population—about one million or more American women. Women with the ataxia-telangiectasia gene, says Dr Swift, have an unusual sensitivity to radiation and could develop cancer after exposure to "appallingly low" doses. He estimates that, in the US, 5000 to 10,000 of the 180,000 breast cancer cases diagnosed each year could be prevented if women with the gene were protected from exposure.

Besides a genetic susceptibility, the physical trauma caused by mammograms could help to spread cancer. Mammograms use 200 newtons of compression, the equivalent of 20 one-kilogram bags of sugar per breast. Some of the modern foot pedal-operated machines are designed to exert a third again as much force—30 bags of sugar's worth of pressure—necessary to get the best-quality image while keeping the radiation dose to a minimum.

A number of researchers, lately those from the Royal Jubilee Hospital in Victoria, British Columbia, speculate that compression during mammography can rupture cysts and disseminate cancer cells. This phenomenon has been observed in animal studies; if a tumour is manipulated, the spread of the tumour to other parts of the body can increase by up to 80 per cent (Ultrasound Med Biol, 1979; 5: 45–9).

Nevertheless, there is huge resistance to change. A Swedish district that ended breast screening was forced to reintroduce the procedure, following immense pressure from the Medical Establishment.

Alvsborg County Council felt the costs of a mass screening programme far outweighed any benefits, and that the money saved could be better spent helping those diagnosed with cancer. The council voted for the ban, following advice from the county's chief physician, Dr Christer Enkvist, who felt that the advantages of screening are "extremely marginal" and can lead to unnecessary surgery.

Enkvist was pilloried in the Swedish press, and doctors and opposition political parties launched a campaign to have the decision reversed.

The Alvsborg councillors commented about their decision: "We realised it was a mistake." But was the mistake more political than medical? (Lancet, March 23, 1996; BMJ, March 9, 1996).

Biopsies

Biopsies—a procedure for investigating a suspect lump found on mammography—have their own set of problems. A thick needle is inserted into the breast under local anaesthetic to remove a small piece of tissue. This is then examined for cancerous cells. In one study of 104 women undergoing biopsy, a quarter had problems afterwards with the wound left by the needle such as infection or haematomas (Lancet, 1992; 339: 128).

Fine-needle aspiration, which can be done on an outpatient basis, has been served up as a less invasive alternative when a lump has been found; in this instance, a fine needle with a syringe is inserted into the breast to draw out a specimen of the lump's contents. However, doctors have been known to puncture the lung, causing a pneumothorax (where air enters the chest and causes the lung to collapse). In 74,000 fine-needle aspirations of the breast, this occurred in about 133 patients, or 0.18 per cent (BMJ, 1991; 303: 924).

Breast ultrasound

With doubts growing about mammograms and other forms of x-rays, researchers are turning to mammary ultrasonography. Ultrasound employs sound waves to produce an image on a screen.

As these instruments, including the transducer (which produces the sound and 'listens' for the returning echoes), have grown more sophisticated, ultrasound use has dramatically increased. These days, it is used to diagnose heart problems and a variety of tumours and circulatory problems, and to examine organs and body parts, including the liver, spleen, uterus, placenta, brain and now breasts.

However, the success of ultrasound largely depends on the skill of the operator, as images can be hard to read and are open to misinterpretation.

In particular, operators worry about visualising 'artifacts'—that is, a ghosted image of something that isn't there or mistaking something quite normal for something sinister: for instance, fetal hair has been mistaken for serious neural-tube defects, and bladders have been taken for pelvic tumours. This often happens when operators make errors in setting up the scanning instruments or positioning the transducer (JAMA, March 6, 1991).

There's also the problem of false echoes creating images on the screen suggesting things that aren't there. This is a particular problem with curved, highly reflective, surfaces such as the diaphragm or nearby large masses such as the gallbladder or bladder. And problems in the accurate reflection of the sound beam can distort the size, shape, position and brightness of structures, making it possible to miss real problems.

With breast examinations, the most commonly used equipment is 'real-time' high-resolution ultrasonography—which means you are seeing on the screen exactly what the transducer is picking up at that moment. Typically, the test requires at most 10 minutes of exposure. According to one study of 100 women with at least one breast nodule, the overall rate of accuracy of ultrasound was 74.8 per cent. This means that, in one in four cases, the diagnosis was wrong. In 10 cases, benign breast cysts were diagnosed as cancerous, and one breast cyst and one abscess were missed altogether (Radiat Med, 1994; 12: 201–8).

The other type of ultrasound used is colour Doppler ultrasound, which measures the flow of blood which, in malignant tumours, tends to be abnormal. There is no consensus on the accuracy of this technique. In one study, overall accuracy for detecting breast tumours was 82 per cent (Anticancer Res, 1994; 14: 2249–51).

But, in another large-scale study, the ability of colour Doppler ultrasound to specify which type of tumour was only 46.9 per cent (Radiol Med, 1994; 87: 28–35) and, in a third, 83–100 per cent of malignant tumours were correctly identified, but only 51–61 per cent of benign lesions were correctly identified (Zentralbl Gynakol, 1993; 115: 483–7).

The authors of one of the studies suggested that colour Doppler ultrasound be used only to add further information to that obtained with con-

ventional ultrasound (Radiol Med, 1994; 87: 28–35). However, the technology appears to be improving; at present, colour Doppler uses colour-spectrum analysis to compare colours with those in surrounding tissues; in cancerous tumours, the colour is typically more intense, with sharp margins. In one study among 70 patients, this method only missed a single tumour (Geburt Frau, 1994; 54: 432–6).

To date, the most accurate diagnostic method is combining ultrasound with high-speed punch biopsies, once lesions have been identified and located by ultrasound. In one facility in Germany, this technique reached an accuracy rate of close to 100 per cent (Geburt Frau, 1994; 54: 539–44).

According to Professor William Lees, Director of Radiology at UCL Hospitals Trust in London, the best ultrasound should have colour Doppler as part of the system and use the two types in tandem, which will boost an operator's confidence regarding the accuracy of the diagnosis. Professor Lees also believes that a skilled operator will have a much higher accuracy rate than the studies demonstrate—closer to 85 per cent.

It may be that ultrasound has a similar overall batting average with mammograms. In one review of 80 patients with both benign and malignant lesions, mammograms picked up five cancers missed by ultrasound, but ultrasound discovered nine cancers missed by mammograms. In yet another study, ultrasound picked up four cancers that weren't yet palpable (Ultraschall Med, 1994; 15: 20–3).

At the moment, ultrasound isn't considered appropriate for screening not only because of the error rate, but because accuracy depends so heavily on skilled operators and there aren't enough of them about. Professor Lees agrees that it should not be used as a general-population screening tool, but may be better used as a first-line investigation of lumps felt during breast examination. When combined with a needle biopsy done on the spot, it can be highly accurate.

Dr Alan McKinna, a consultant breast cancer specialist, says that most doctors don't like to rely on either ultrasound or mammograms alone, since ultrasound will pick up lumps you can feel, but miss those you can't whereas mammograms will pick up the invisible lumps, but may miss the big ones you can feel. Many doctors are using both.

The bottom line appears to be that ultrasound may be a better option than mammography to diagnose women with symptoms because it is safer and possibly more accurate than mammography for the under-50s. Although the technology is vastly improving and will probably eventually develop into a good tool, there are still some problems with accuracy.

Ovarian cancer

These days, most US gynaecologists routinely screen for ovarian cancer. This widespread screening was prompted by the highly publicised death in 1989 of the American actress and comedienne Gilda Radner at the age of 42 from ovarian cancer. Screening involves ultrasound, pelvic examinations and analysis of the blood.

However, this flurry of activity among doctors is against the express recommendations of the American government. The National Institutes of Health (NIH) recently recommended *against* routine screening, declaring that it is inaccurate and even dangerous.

The NIH said that these tests are so unreliable that surgeons have unnecessarily operated on many women who don't have the disease. Even if doctors do get it right, by the time the cancer shows up, it's too late. And in only a quarter of cases is ovarian cancer detected at a stage early enough for effective treatment.

Prostate cancer

With prostate cancer, the medical profession has been pushing routine screening of the over-50s for this second major killer of older men. The three screening techniques include prostate-specific antigen (PSA), transrectal ultrasound (TRUS) and digital rectal examination (DRE). However, an analysis by the Toronto Hospital in Ontario, Canada, concludes that the high inaccuracy associated with these methods can do more harm than good. The main risk is unnecessary surgery, which causes widespread incontinence and impotence in a third of cases (Lancet, 1994; 344: 700–1). Furthermore, there is no evidence to show that men given a prostatectomy will survive any longer than those left alone and undergoing 'watchful waiting'.

One study discovered that 366 men given the all-clear with a PSA test went on to develop prostate cancer, while raised values—which indicate the presence of the cancer—were found in just 47 per cent of men who, in fact, had prostate cancer (JAMA, 1995; 273: 289–94).

Recently, it has been discovered that PSA can give false readings if the subject has ejaculated in the previous two days. Men over 40 have very high PSA levels immediately after ejaculating and, although these start to fall significantly only six hours later, it takes 48 hours or more for levels to normalise (Urology, 1996; 47: 511–6).

Bowel cancer

Because of the poor outlook for colorectal cancer patients, the official line is that people should be encouraged to have regular check-ups to detect the cancer before it takes hold, particularly those individuals who are at high risk.

However, in practice, there are many problems in carrying through this advice. First, the warning signs of the cancer (iron-deficiency anaemia, rectal bleeding, change in bowel movements, abdominal pain and weight loss) tend to become noticeable only when the cancer is already well established.

Second, the diagnostic tests themselves are sometimes not reliable. The simplest test, called the occult blood test, measures blood in the faeces, but is notoriously prone to false-positive results and, more important, to false negatives as well. The more complex barium enema fares little better.

The more reliable tests, such as sigmoidoscopy and colonoscopy (visualisation of different areas of the colon with a lighted tube inserted via the anus), are invasive, discouraging patients from undergoing routine checks. Furthermore, experience has also shown that even these can sometimes fail to detect precancerous polyps (Ann R Coll Surg Eng, 1998; 80: 246–8).

Finally, if all patients who were at risk were to demand routine check-ups, neither private nor state-run systems would be able to cope. But, as the US National Cancer Institute admits, "limiting screening or early cancer detection to only high-risk groups would miss the majority of colorectal cancers" (PDQ Statement, June 1999).

Pre-scan

These days, any doctor who detects a breast lump is likely to recommend a scan of some sort. According to **WDDTY** columnist Harald Gaier, in the early stages, it's very difficult to tell with absolute certainty whether a lump is cancerous or benign unless the lump is biopsied.

Nevertheless, he says, it's possible to get some idea of the sort of lump it is by feel. Pain, changes in size during your menstrual cycle, easy mobility, absence of hardness and the presence of multiple nodules probably means there is no cancer, while malignant lumps are usually hard, irregular, non-tender and fixed in position.

A lump that remains the same throughout your cycle or increases dimpling of the overlying skin, or tethering to the skin above or to the muscle below the lump is slightly more likely to indicate cancer.

Discharges, says Gaier, may indicate a number of things. A blood-stained discharge from the nipple could indicate cancer—or equally benign cystic mastitis. A greenish or yellowish discharge is invariably caused by mastitis; a watery one, by early pregnancy and a milky discharge (that is, if you're not breastfeeding), by an adverse drug reaction.

Pain in the breast *per se* isn't necessarily cause for alarm (although it may sometimes prefigure the future development of breast cancer). Pain is often one of a collection of symptoms of PMS, and can be present with breast abscesses or a *Candida albicans* yeast overgrowth.

Self-examination

Given the well-known inaccuracy of cervical smears, a better option may be your own observation. Professor McCormick says the most important early warning (early enough in most cases for treatment) may be any sort of bleeding between periods—for instance, after sex—or a persistent vaginal discharge.

The likelihood of cervical cancer increases with the number of sexual partners, smoking, taking the Pill or other oestrogens, whether you've had any sexually transmitted disease or begun your sexual life early.

If you don't fall into any of these categories, be wary of your doctor pres-

surising you into taking the test, particularly as he now stands to benefit financially from it.

If you do have to undergo a cervical exam, you might wish to ask for a visual examination of the cervix rather than a routine smear. In a study of 45,000 women in New Delhi, India, visual examination picked up nearly three-quarters of the cancers found among the sample by looking for cervical erosions which bled on touch, small growths or, in general, a suspicious looking cervix (BMJ, 1992; 304: 534).

As for mammograms, medicine in general has downplayed the importance of regular physical examination of breasts as a diagnostic tool, despite an advisor to Britain's Chief Medical Officer admitting that "more than 90 per cent of breast tumours are found by the women themselves." A seven-year study of 33,000 women by the Pennine Breast Screening Assessment Clinic in Huddersfield showed that self-examination may reduce breast cancer deaths by up to one-fifth. Although some lumps detected by mammography aren't palpable, the reverse is true as well. Indeed, one researcher believes that routine screening lulls you into a false sense of security.

If you don't want a mammogram, make sure to opt for a regular programme of self-examination (your doctor should be able to show you how) and breast examination by your doctor. If he is unwilling or has limited experience of physical examinations, you might ask to be referred to a clinic where these are routinely carried out, or find another doctor.

If you do decide to have a mammogram, shop around. Find out if the equipment to be used is dedicated—that is, specially designed for mammography and therefore able to give the best image with the least radiation.

Ask how many mammograms the lab does. The American College of Radiology recommends using a facility where each radiologist reads at least 10 mammograms a week. Machines should be tested at least once a year.

If a lump is found either through mammography or self-examination, you need to establish whether or not it is malignant. Some harmless cysts can be identified as such through a physical examination. If your doctor

tells you it's a cyst, but still suggests sending you for a biopsy, find out if it's really necessary.

If a lump is benign, returning each year for mammograms 'just in case' is likely to serve only to create a problem where none existed. Dr Ellen Grant, author of *The Bitter Pill*, warns that a benign lump indicates that your antioxidation systems aren't working properly, possibly as a result of nutritional deficiencies. Radiation from repeated x-rays will only deplete your body's supply of antioxidating nutrients further, making cancer more likely.

Don't have a scan—such as an abnormal breast exam—without a good reason. Although ultrasound appears to be safe, no long-term studies have been done in this area.

Preparing for ultrasound

Check that the operator is highly trained and highly skilled. Don't be shy about asking his accuracy rate or if there have been any serious cases he's missed.

Ask about the state of the equipment—how new it is and when last serviced. Always seek out the best available equipment that is specifically run by a radiologist specialising in ultrasound.

Chapter 3
Conventional treat-

Does it work?

American cancer specialist Bernie Siegel argues in both his books, *Love, Medicine & Miracles* and *Living, Loving and Healing* (Aquarian), that the essential ingredient for healing is belief that the treatment is going to work. If the absolute certainty of healing is there, the road taken is secondary.

Siegel has seen 'miracle cures' among those undergoing chemotherapy and other conventional treatments. Often, these patients have been part of his Exceptional Cancer Patients programme, an individual and group therapy which encourages cancer patients to express themselves through drawings, dreams and images. Nonetheless, many conventional treatments can come with serious side-effects and, in this section, we outline what they can be.

It's worth noting the conclusions of the late Dr Hardin Jones, professor at the University of California in Berkeley. After analysing cancer survival statistics for several decades, he concluded in 1975 that "patients are as well, or better off, untreated"—an extraordinary conclusion that has not only never been refuted, but has been upheld in subsequent research.

Chemotherapy

In the US, where the battle lines between alternative and conventional therapies have tended to be the most sharply drawn, cancer specialists have done their best to convince patients of the benefits of chemotherapy.

They point to seemingly impressive "response rates", not bothering to mention that these rarely translate into significant improvements in survival time or quality of life. And yet, patients sometimes appear to have been pressured into accepting chemotherapy even when the oncologist has known that it has little or no benefit.

A peculiarly candid admission of this practice came in 1978 from a lead-

ing US specialist in colon cancer, Dr Charles Moertel, of the prestigious Mayo Clinic in Baltimore. "Even when administered in most ideal regimens," he wrote, summarising the value of 5-fluorouracil (5-FU; see below), the major chemotherapeutic drug for colon cancer, "5-FU will produce an objective response in only about 15 to 20 per cent of treated patients. These responses are usually only partial and very transient. This minor gain for a small minority of patients is probably more than counterbalanced by the deleterious influence of toxicity for other patients, and the cost and inconvenience experienced by all patients".

However, after acknowledging that there was no medical justification for prescribing chemotherapy, Moertel concluded with a statement that sums up the view of medicine toward conventional cancer therapies: "We know it doesn't work, but it's better than alternative medicine. This does not imply that [chemotherapy] should be abandoned. Patients with advanced gastrointestinal cancer and their families have a compelling need for a basis of hope. If such hope is not offered, they will quickly seek it from the hands of quacks and charlatans" (N Engl J Med, 1978; 299: 1049–52).

Chemotherapy is a drug-based treatment, usually taken orally or by injection, which attempts to shrink a cancer so that the diseased organ can be saved.

It was first proposed as a treatment for cancer right after World War II, when research on so-called mustard gas—cyclophosphamide—demonstrated that it has the ability to kill living cells, particularly those which rapidly divide, such as those in the intestinal tract, bone marrow and lymph system. Doctors soon came up with the idea that they could use mustard gas to poison cancer, which constitutes the most rapidly dividing cells of all. In fact, many of the drugs we use today are close cousins of mustard gas—one reason we find them so toxic (*The Immortal Cell* by Dr Gerald B. Dermer, Avery, 1994).

It's probably no accident that medicine uses the tools of war against what the medical profession views as the most outlaw of cells. Nausea, vomiting and hair loss are the side-effects most commonly associated with chemotherapy. However, these are only the beginning. Specific types of chemotherapy drugs bring their own particular shopping list of side-

effects. Cisplatin (Platinol), made of the heavy-metal platinum, can damage nerves and kidneys, and cause hearing loss, seizures, irreversible loss of motor function, bone-marrow suppression, anaemia and blindness.

Mechlorethamine, an analogue of mustard gas (the 'M' in MOPP treatment, the standard procotol for Hodgkin's disease), is so toxic that those administering the drug are advised to wear rubber gloves and avoid inhaling it. This drug is known to cause thrombosis, jaundice, hair loss, nausea and vomiting. Merck, its manufacturer, warns that "the margin of safety in therapy with Mustargen is narrow and considerable care must be exercised in the matter of dosage. Repeated examinations of blood are mandatory as a guide to subsequent therapy".

A most dreaded complication of chemotherapy treatment is mucositis (or inflammation of mucus membranes, particularly of the gut and mouth), which can lead to life-threatening infection (Curr Opin Oncol, 1995; 7: 320–4). Various types of chemotherapy can cause heart problems, destroy bile ducts, cause bone-tissue death, restrict growth, cause infertility, lower white and red cell counts, and lead to intestinal and lactose malabsorption (Lancet, 1994; 343: 495).

In the early 1970s, medicine discovered that certain rare cancers would respond to chemotherapy and result in a person living longer. These include combinations of drugs for Hodgkin's disease, certain non-Hodgkin's lymphomas, some germ cell tumours, testicular cancer and certain cancers in children, such as Wilms' tumour, acute lymphocytic leukaemia and choriocarcinoma, in which fetal cells transform into cancer and threaten the mother's life.

Shortly after chemotherapy was invented 50 years ago, the toxic chemical fluorinated pyrimidine was developed into a drug called 5-fluorouracil—or 5-FU for short. Although 5-FU was increasingly used from 1953 onwards, for the first 35 years doctors were disappointed to find that, although it might reduce tumour size, it had marginal effects on patient survival. Latterly, however, 5-FU has been combined with other cytotoxic drugs, and these cocktails are now widely prescribed for advanced cases of the disease following surgery.

Extraordinary claims are being made about them, with some doctors

claiming a reduction in mortality as high as 33 per cent. But the surgeons are less flattering; some of their own studies show little benefit from the new chemical cocktails—and even increases in mortality after their use (Am Surg, 1996; 62: 546–50).

A group of Canadian doctors recently reviewed the entire issue of chemotherapy from an angle relatively new to medicine: the value of therapy in terms of the patient's quality of life.

Quoting a review of a number of studies which showed that chemotherapy increases five-year survival from colorectal cancer by an average of seven per cent, they boldly stated: "Despite the US National Institutes of Health consensus statement endorsing chemotherapy, many clinicians regard such a seemingly small benefit not worth the expense, inconvenience, discomfort and risk of treatment for their individual patient with colorectal carcinoma" (Ann Chir, 1998; 52: 711–5).

Adding to the uncertainty of chemotherapy are its side-effects. These are, of course, substantial, since the treatment destroys healthy cells as well as cancerous ones. A recent study has shown a litany of side-effects for patients whose immune systems are already compromised by the cancer. These range from nausea, vomiting and diarrhoea to thrombocytopenia (too few platelets), leukopenia (decrease in number of leukocytes) and neutropenia (decrease in number of neutrophils) (J Clin Oncol, 1998; 16: 3537–41).

The lattermost three conditions are caused by the destruction of the white blood cells that normally fight infections, and they can often result in major problems; if accompanied by a fever, death will ensue within hours or even minutes. Indeed, many cancer patients may have actually been killed by chemotherapy, and not the disease (J Clin Oncol, 1997; 15: 3320–9).

A new chemotherapy drug called irinotecan (marketed by Upjohn as Camptosar) has recently come into use, intended for patients who don't respond to 5-FU. However, studies show that, like 5-FU, Camptosar's benefits are limited, extending survival by about three months compared with no treatment at all—but with all the attendant side-effects (Lancet, 1998; 352: 1413–8). Chemotherapy has also been found to be useless in treating

metastases in the liver—the most common result of colon cancer (Arch Med Res, 1998; 29: 319–24).

So, 25 years and many billions of pounds later, chemotherapy's modest successes are almost identical to what they were in 1971, says chemotheraapy critic Ralph Moss (*Questioning Chemotherapy*, Equinox Press, 1995). The fact is, for most of today's common cancers—the ones that kill 90 per cent of cancer patients every year—chemotherapy has never been proved to do any good at all and, in fact, may do harm.

After surgery, giving chemotherapy as a just-in-case measure to kill any 'secret' pockets of cells has appeared to improve the survival prospects of certain groups of patients with breast, colon or lung cancer.

Recurrence rates are supposed to be reduced by a third and survival improved (N Engl J Med, 1992; 326: 563).

However, this evidence is only empirical (that is, based on observation, not scientific studies). It is very likely that it was the surgery alone that helped the survival of these patients.

Another side-effect of chemotherapy, which is not so well reported, is the increased risk of developing leukaemia. This is particularly so among women who receive certain forms of chemotherapy or drugs combined with radiation for breast cancer. One of its main problems is that it not only kills cancerous cells, but normal ones too, including those of the bone marrow—the foundation of the immune system—and of the intestinal walls and hair follicles.

The US National Cancer Institute in Bethesda, Maryland, studied 82,700 women diagnosed with breast cancer throughout the US and concluded that the risk of leukaemia was increased two and a half times after localised radiotherapy. Using alkylating agents alone increased the risk 10-fold; with combined radiation and drug therapy, the risk increased by 17 times and, with the chemotherapy drug melphalan, by 31 times, which was 10 times that of cyclophosphamide, another drug used to treat cancer.

There was little increase in the risk associated with cyclophosphamide doses of less than 20,000 mg. "Systemic drug therapy combined with radiotherapy that delivers high doses to the marrow appears to enhance the risk of leukaemia," concluded the study.

An editorial in the same issue of the New England Journal of Medicine that published the study concluded that doctors need to be more "selective" in applying just-in-case therapy to breast cancer patients who have been cured (N Engl J Med, June 25, 1992).

Chemotherapy for cancer in childhood can also affect the fertility of men and women or cause birth defects. For men, drugs like procarbazine, chlorambucil and cyclophosphamide have been shown to be toxic to the testes; most male patients will be left sterile after a cumulative dose of 18 grams of alkylating agents such as cyclophosphamide (although some men begin producing sperm again after 18 months).

For women, chemotherapy can cause ovarian failure and premature menopause in virtually any woman treated, according to some studies (CA-A Cancer J Clin, July/August, 1990). This could be cause for concern as five per cent of cancer patients are under 34.

As for those who do go on to conceive children, a study conducted in New York found that, of 202 pregnancies among 306 patients, eight per cent of the children of women and 7.9 per cent of the children of the men had birth defects. Although this was not considered statistically significant, the study did show that congenital heart defects were identified in 10 per cent of the children of women who'd been treated with dactinomycin compared with 0.6 per cent of a control population (N Engl J Med, July 18, 1991).

The leukaemia risk was further endorsed by a study from Copenhagen's Department of Oncology of the Rigshospitalet. It showed that, of 212 patients being treated with etoposide, cisplatin and bleomycin, five developed leukaemia, which translates into a cumulative risk of nearly five per cent from five to seven years after the start of the treatment. In the study, the cause was thought to be due to the etoposide alone or in combination with the other two drugs. It was also thought to be dose-related, since all five patients had received a cumulative dose of more than 2000 mg/m^2 of etoposide whereas no drug-related cancers were found in those who had received less than that.

But, for all the risks of chemotherapy, does it actually work? A report by Dr Ulrich Abel, a German epidemiologist who has published a small book

entitled *Cytostatic Therapy of Advanced Epithelial Tumours—A Critique* (Hippocrates Verlag, Stuttgart), thinks not. Abel, who has a PhD in epidemiology and works in the Heidelberg/Mannheim Tumour Centre, examined virtually all the published literature dealing with chemotherapy—several thousand articles. He also wrote to some 350 cancer centres and experts around the world to find any other research that hadn't been published.

Abel concluded that the success of most chemotherapies was "appalling"—that is, there is no scientific evidence for its ability "to extend in any appreciable way the lives of patients suffering from the most common organic cancer". Nor does it improve the quality of most patients' lives.

Dr John Cairnes, of Harvard University's School of Public Health, says chemotherapy helps no more than five per cent of patients. He also described the chemotherapy used to treat malignancies that are too advanced for surgery, which constitute about 80 per cent of all cancers every year, a "scientific wasteland" (Lancet, August 10, 1991; Townsend Lett Docs, August/Sept, 1991).

In one of the few reviews of all studies comparing chemotherapy with another form of treatment, chemotherapy proved no better than tamoxifen alone in women over 50 with breast cancer (Lancet, 1996; 347: 1066–71).

Those cancers for which there is little evidence to support the use of chemotherapy include breast, non-small cell of the lung, colorectal, skin, liver, pancreatic and bladder cancers.

Chemotherapy *has* been shown to increase the survival of patients with ovarian and small cell lung cancers, intermediate- and high-grade non-Hodgkin's lymphoma, and localised cancer of the small intestines although, again, this is not conclusively proven (Curr Opin Oncol, 1995; 7: 457–65). Sometimes, the advantages are major, as with ovarian cancer, where it's been shown that chemotherapy may extend the lives of patients for years. More often, though, the effect is modest, as with lung cancer, where patients increase survival by only a few months *(Questioning Chemotherapy*).

Most cancer chemotherapy has been inadequately tested. Dr Gerald

Dermer, a cancer research scientist, claims that the first models for testing the cancer drugs were transplanted lymphomas in mice (that is, a tumour was grown on one animal and then transplanted to another). Scientists also use man-made laboratory cell lines when experimenting with drugs.

However, Dermer discovered that cancer cells in both cases are profoundly different than those in living human beings. Drugs that may kill transplanted tumours or cell lines have rarely been effective in humans (*The Immortal Cell*). The other problem is that cancer doctors define 'cure' and 'response' in different terms than you or I might. In the main, oncologists look only at 'response'—that is, shrinking of the tumour—as a measure of success, without considering whether it increases survival or improves quality of life.

Dr Abel has found that, when a tumour mass partially or temporarily disappears, those tumour cells which remain can sometimes grow much faster afterwards. Often, patients who do not respond to chemotherapy survive longer than those who do (Der Spiegel, 1990; 33: 174–6, J Otolaryngol, 1995; 24: 242–52).

Ralph Moss describes a textbook on medicine in which a top NCI scientist said that, for most forms of cancer, many patients may initially respond. But in only three forms of cancer—ovarian, small cell lung and acute non-lymphocytic leukaemia—did any appreciable percentage survive without disease and, even then, it was at best less than a sixth of the total group of patients. In all the other types of cancer, disease-free survival was rare.

Shrinkage of solid tumours should not be overinterpreted as it often has little or no survival benefit, according to oncology consultant G.M. Mead of the Royal South Hants Hospital (BMJ, January 28, 1995). Major chemotherapy manufacturer Bristol Myers discloses that only 11 per cent of patients taking the carboplatin and 15 per cent of patients taking cisplatin had a complete response to the drugs; remission lasted, on average, about a year and all patients survived, on average, only two years. Hardly a huge success, given that these are two of the most commonly used drugs for ovarian cancer—which is supposed to be one of the cancer types that responds best to chemotherapy (*Physician's Desk Reference*, 1995).

In the majority of studies, the most important question of all—does chemotherapy help you to live any longer than you would if you didn't get the treatment—is never even asked (*Questioning Chemotherapy*).

In the rush to be seen to be doing something about cancer, the US FDA has now officially sanctioned the process by which new drugs for cancer can be fast-tracked to the marketplace so long as they show they can shrink tumours. There is no need to show that they improve the survival of cancer patients (BMJ, 1996; 312: 886).

The latest therapies are termed 'rescue' treatments, as in rescuing you from the brink of death. Doctors harvest bone marrow from the patient before administering high-dose chemotherapy. The bone marrow is then replanted in the hope that it will somehow rescue the patient from murderously low blood counts.

Says oncologist Dr Albert Braverman (Lancet, April 13, 1991): ". . . many medical oncologists recommend chemotherapy for virtually any tumour, with a hopefulness undiscouraged by almost invariable failure."

After the success of treating Hodgkin's disease with a cocktail of cancer-killing drugs and steroids, medicine has applied this protocol to all other types of cancer, even though there is no evidence that it does any good at all. In oncology, more is always considered better.

In non-Hodgkin's lymphoma, one such protocol—ProMACECYTA-BOM—is a cocktail of 10 powerful chemotherapeutic agents when there is no solid evidence that even a single agent significantly saves lives.

Now, we hear that children who are successfully treated for Hodgkin's disease are 18 times more likely later to develop secondary malignant tumours. Girls face a 35 per cent chance of developing breast cancer by the time they are 40—which is 75 times greater than the average.

These findings are a crushing blow to a medical establishment that had been congratulating itself for its Hodgkin's disease treatment, considered to be a model of successful therapy. Cure rates of over 90 per cent have been achieved from chemotherapy and low-dose radiation.

The risk of leukaemia increases markedly four years after the end of successful treatment and reaches a plateau after 14 years, but the risk of developing solid tumours remains high, approaching 30 per cent at 30 years.

These findings, which mean all children successfully treated for Hodgkin's disease need to be carefully monitored for the best part of their lives, come from the Late Effects Study Group, based at the University of Minnesota. The group followed 1380 children treated for Hodgkin's between 1955 and 1986 to determine any major reactions after treatment had finished.

The risk of developing a secondary tumour increased in those who were older when they had the cancer treatment, with 74 per cent of cancers occurring in those whose Hodgkin's disease was diagnosed between the ages of 10 and 16.

But the most worrying development was the vastly increased risk of breast cancer among the female patients. The level of radiation seems to be the deciding factor, although the age when Hodgkin's was diagnosed was also important. Sixteen of the 17 breast cancer cases occurred in patients who were aged between 10 and 16 when treatment first started (N Engl J Med, March 21, 1996).

Radiotherapy

Radiotherapy is sometimes used instead of surgery when a tumour is inaccessible, but is more often used as an additional therapy. It is far less common than chemotherapy simply because there are so few centres that can administer radiotherapy.

Small doses of radiation are usually pinpointed to the diseased organ by using a radiation machine (although, sometimes, internal radiotherapy can be prescribed wherein a radioactive isotope is placed inside the body, resulting in a hospital stay). Nearly half a million patients in the US were treated with radiation in 1990, making radiotherapy one of the most widely used treatments for cancer.

Radiation was first used in medicine by Marie and Pierre Curie, the well-known French pioneers, at the turn of the century. The radiation used to treat cancer is called 'ionising radiation' and affects rapidly dividing cells such as tumour cells.

A breakthrough in the 1920s meant that doctors didn't have to depend upon natural sources of radiation anymore. They could produce it them-

selves artificially. X-ray doses could also be measured and, therefore, controlled.

High-energy radiation—cobalt 60—appeared in the 1950s and was used to treat cancer deep inside the body without burning the skin. By the 1960s, a new invention called the linear accelerator appeared and produced even higher energy.

Radiation beams vary widely in the energy they produce, from about 100 kilo-electron volts (KeV) to 25 million electron volts (MeV). As a rule of thumb, the higher the energy, the greater the depth of penetration. Low-energy beams deliver their highest dose at skin level while beams with 25 MeV achieve their highest dose at a depth of about two inches. The newest measurement is the gray (Gy): one Gy equals 100 rads.

Radiotherapy, chemotherapy or combinations of the two treatments are used to fight tumours. Alternatively, surgery can be used as the first line of attack. However, there is no evidence anywhere that combining radiotherapy with chemotherapy and surgery produces substantial gain in overall cures (Pointon RCS, ed, *Radiotherapy in Malignant Disease*, Springer–Verlag, New York, 1991).

Evidence is now emerging which suggests that radiotherapy is not quite the wonder cancer treatment it was originally thought to be. Not only does it spread the cancer rather than eradicating it, in some cases, it actually causes cancer in healthy cells.

Breast cancer patients may be at risk of developing lung cancer after radiation. In one study of 31 patients who'd received radiotherapy for breast cancer, 19 went on to develop a lung cancer an average of 17 years later—mostly in the lung on the same side as the breast that had been irradiated (Med Oncol, 1994; 11: 121–5). Some oncologists believe that the lung is especially sensitive to radiation damage, productin either scar tissue or inflammation—which would tend to argue against high-dose radiotherapy for lung cancer (Strahl Onkol, 1995; 171: 490–8). Breast cancer patients also risk soft-tissue cancers of the breast (Int J Rad Oncol Biol Physiol, 1995; 31: 405–10).

For Hodgkin's disease, radiotherapy also poses a risk of breast cancer years later (J Gynecol Obstet Biol Repro, 1995; 24: 9–12). In rectal cancer,

animal studies have demonstrated that the descending colon may be especially susceptible to cancer caused by radiation, particularly after surgery where blood vessels are joined up (Dis Colon Rec, 1995; 38: 152–8).

Side-effects also multiply when chemotherapy and radiation are given together.

In cervical cancer, where radiation bullets are often inserted into the vagina, cervical smears performed later often show abnormalities, such as fibrosis, and damaged cells (Diagn Cytol, 1995; 13: 107-–19). What this means over the long term is anyone's guess.

Although doctors are experimenting with maximum doses in cases that are deemed intractable, in many cases, higher doses of radiation may only lower survival. In one study examining the longer-term effects of radiation for cervical cancer, survival and local absence of disease decreased with every additional day of treatment beyond 55 days, no matter how early or advanced the disease (Int J Rad Oncol Biol Physiol, 1995; 32: 1301–7).

Perhaps most worrying, radiation can be a slow-motion time bomb where side-effects only show up years later. For instance, major urinary tract complications in patients treated for cervical cancer are most prevalent in the first three years, but can show up any time for 25 years (Int J Rad Oncol Biol Physiol, 1995; 32: 1289–300). In children, growth and premature sexual development can occur with doses as low as 18 Gy (Int J Rad Oncol Biol Physiol, 1995; 31: 1113–21).

Delivered by machine or from radioactive implants, radiotherapy often carries with it a myriad of side-effects, a large number of them serious. The most common is fatigue, which occurs in most patients who receive therapy to a large area of their body. The skin is also reddened rather like a sunburn. Hair loss in the treated area is common.

Radiation to the head and neck can damage the salivary or tear glands, and you're left with a permanently dry mouth or eyes. Radiation to the abdomen may cause nausea, vomiting and diarrhoea (*Effects of Radiation on Normal Tissues*, Churchill Livingstone, 1993). Injuries to bone marrow are common and this leads to a weakened immune system. The bones may be damaged and osteoporosis may occur.

Radiation also scars most of the tissues it hits. Each part of the body can

only tolerate a fixed amount of radiation. Once a dose has been given, radiation shouldn't be given again.

In virtually every form of cancer, radiotherapy has caused other appalling damage, and a few studies give an indication of its high incidence. In one study, one-third of patients receiving chemotherapy and radiation after surgery for rectal cancer ended up with major complications (Aust NZ J Surg, 1995; 65: 732–6). We've also discovered that administering radiotherapy after surgery appears to cause more side-effects than giving it before an operation (Eur J Cancer, 1995; 31A: 1347–50).

With breast cancer, the most feared side-effect is fibrosis, where the skin is scarred and damaged. Even when the scar tissue is cut out, the skin rarely heals properly (Strahl Onkol, 1996; 172: 34–8).

Radiotherapy can also cause problems with reconstructive surgery afterward. Some 42 per cent of breast implants had problems with pain and poor fitting in women who'd been irradiated compared with only 12.5 per cent of those who hadn't received radiotherapy (Plast Reconstr Surg, 1995; 96: 1111–5).

With cervical cancer, patients can find they are incontinent after radiation therapy following hysterectomy (J Wound Ost Contin Nurs, 1995; 22: 64–7). Urinary problems also afflict men given pelvic radiation (Eur J Cancer Care, 1995; 4: 158–65). In cervical and testicular cancers, treatment can cause a high percentage of infertility (Blood Rev, 1995; 9: 93–116) although, with men, fertility might be preserved if the dose to the unaffected testis is reduced to less than 2 Gy (Clin Oncol, 1994; 6: 377–80).

Furthermore, if similar doses are used on women when the pelvis is irradiated, the percentage of women undergoing premature menopause or infertility is low (Int J Rad Oncol Biol Physiol, 1995; 32: 1461–4). Nevertheless, half of women given radiotherapy for cervical cancer suffer sexual dysfunction (Int J Rad Oncol Biol Physiol, 1995; 31: 399–404).

Radiation can also weaken your heart and vessels around the heart, causing narrowing of the arteries (Giorn Ital Cardiol, 1995; 25: 877–84) and cause thyroid dysfunction in up to 45 per cent of patients given it for throat cancer (Clin Otolaryngol, 1995; 20: 254–7). In head and neck cancer, radiation can also injure the brain (Am J Neurol, 1991; 12: 45–62), and possibly

lower intelligence in children (Child Nerv Syst, 1995; 11: 340–5) and damage the hearing (Am J Otol, 1994; 15: 772–80).

Another underappreciated problem is fractures in bones exposed to radiation. This occurred in six per cent of patients with soft-tissue sarcoma (Eur J Cancer, 1994; 30A: 1459–63). Patients whose pelvis is irradiated can suffer so much bone damage that they must undergo total hip replacement. But even this is not a satisfactory solution. In one study of 56 patients undergoing joint replacement after radiation damage, 52 per cent had their replacements loosen, probably due to the weakening of bones. Although surgeons can use reinforcement rings to hold the joints in place, nearly a fifth still loosen. Patients are also at risk of infection (J Bone Joint Surg [Br], 1995; 77: 847–52).

Bowel cancer patients given radiotherapy have a high risk of long-term incontinence and major disturbances in bowel function, particularly when treatment is combined with chemotherapy (Ann Surg, 1994; 220: 676–82).

Injuries caused by radiotherapy treatment invariably follow breast cancer surgery. Many of the women who have set up the British Radiotherapy Action Group Exposure (RAGE), after suffering catastrophic arm injuries caused by radiation therapy for breast or cervical cancer, probably didn't need the treatment anyway.

Radiotherapy damage has left some of RAGE's members with excruciating pain, dietary complaints and a need for repeated corrective surgery. However, in spite of the horror stories and years of research, 50 per cent of patients with cancer are treated with radiotherapy during the course of their disease.

As one article pointed out: "Technology has advanced with accelerated regime . . . and new radiotherapy treatments. Yet still we are no further forward in dealing with toxicity from treatment. The focus of research has been on developing new cures, and only now are questions being raised about the quality of life of patients having radiotherapy treatment" (Eur J Cancer Care, 1995; 4: 158–65).

Light therapy

Photodynamic therapy is a technique that uses light to destroy tumours.

The patient is injected with a marker substance which attaches itself to cancer cells and makes them sensitive to light. This makes it possible to detect the location of the tumour with great accuracy and, by applying high-intensity light in a narrow band of wavelengths, the cancer cells can be destroyed with no damage to healthy tissue. For internal cancers, surgery is needed to insert an optical probe to carry the light to where it is needed.

In the UK, the Cancer Research Campaign is supporting research into photodynamic therapy. A light source called the Paterson Lamp has been developed that reduces the cost of treatment by replacing the laser source used in US research. At present, this lamp is being used to treat non-melanoma skin cancer.

Immunotherapy

Immunotherapy, medicine's latest fad, holds that you can fight cancer by giving help to the immune system. Behind this theory is the belief that the immune system has a built-in mechanism for fighting cancer just as it fights infections. However, no one has been able to find foreign antigens (foreign proteins) in tumour cells. Unlike viruses, tumour cells have the same antigens as normal cells so the immune system cannot recognise tumours as different and destroy them.

Some of the treatments centre around interleukin-2 (IL-2), a growth factor which is cultured with a patient's lymphocytes to transform them into killer cells. This is mainly being tried out on kidney and skin cancer patients, with little success (*The Immortal Cell*).

One study of colorectal cancer patients given a 'vaccine' against tumour cells appeared to prove benefit, until the study was investigated by the Committee on Government Operations of the US House of Representatives and found to be unreliable (*The Immortal Cell*).

Researchers are attempting to use heat shock proteins (HSPs) to develop vaccines that offer new opportunities for cancer immunotherapy. Pramod Srivastava, professor of immunology in the biological sciences department at Fordham University in New York's Bronx, has been studying the mechanism by which HSPs help bolster the immune system. Produced by almost every cell in the body under normal conditions, HSPs increase in

number when cells encounter stress, such as a sudden increase in temperature (JAMA, 1995; 274: 291).

However, a generation of research and development has yet to yield an effective immunotherapy for cancer. And, like chemotherapy, the latest immunotherapy regimens make patients extremely sick, so it's considered for only a selected handful of the healthiest patients.

Surgery

Is it effective?

In the late 19th century, the response of surgeons to cancer was to cut away huge amounts of healthy tissue as an insurance policy that they had 'got it all'. In head or neck cancer, surgeons removed part of the jawbone; in breast cancer, they removed the breast, lymph nodes and most of the chest wall. If you had cancer of the pelvis or internal organs in the early part of this century, you might lose the entire lower-third of your body.

Although these days the treatments are less mutilating, today's doctors have continued with the notion that every last cancer cell must be cut away.

This is why most cancer specialists fear, more than anything, a 'local recurrence'. This means the cancer has reappeared at the spot where it was first detected.

Although fewer doctors persist with mutiliating surgery, and the efforts are afoot to adopt conservative surgery in many areas, doctors still employ complicated mixtures of chemotherapy, radiation and surgery to ensure against the return of one single cell.

However, Dr Richard Evans, an American surgeon, is one of the few with the courage to challenge this paradigm of all-out nuclear warfare. Dr Evans, who scoured much of the medical literature on cancer, discovered that, in many types of cancers, although conservative surgery without radiation or chemotherapy does produce more local occurrences, patients don't die one day sooner than those who get the chemotherapy or radiation as well. In other words, he writes, "there is no survival disadvantage to leaving tumour cells alone and simply observing the patient" (*Making the Right Choice*, Avery Publishing, Garden City Park, NY, 1995). This is

also the case with soft-tissue sarcomas—cancers of muscle or fat—and skin cancer. Dr Evans cites studies demonstrating that, when surgeons use slightly larger margins (one to two centimetres) when excising certain types of tumours, patients live just as long as they might with chemotherapy or radiation, but without the side-effects or dangers that these treatments offer.

Surgery on its own can be the treatment of choice for certain early cancers—of the stomach, colon, cervix, rectum, thyroid, skin, breast and testis. When conservative surgery is used, there is often no lessening in survival so long as recurrences are promptly removed. For instance, in a randomised trial of rectum-sparing conservative surgery, there was no difference in survival and bowel function was preserved (Ann Surg, 1986; 204: 480–7).

Nevertheless, reviews on the efficacy of surgical treatment in cancer and in breast cancer in particular (Med Hypoth, 1993; 40: 129–38) show that there is no scientific evidence that surgery has any effect on survival or mortality for any form of cancer—which suggests that cancer must be a systemic disease.

The second of these reports analysed the results of six randomised mammographic breast cancer screening trials that led to claims that mammograms save lives by providing earlier detection and, therefore, enabling earlier surgical intervention. This claim was rejected on the grounds that some of the trials were poorly conducted, which could have skewed the results. The papers—by Don Benjamin of the Cancer Information and Support Society, Crowsnest, New South Wales—show that the trials with the greatest number of easier tumours to detect had the smallest reduction in mortality and those with the smallest number detected had the largest reduction in mortality—so surgery could not have produced the observed results.

Mastectomies

Most doctors still overtreat early breast cancer, cutting out more than they need to, or overloading the patient with drugs or radiation. Despite a variety of surgical techniques, a host of back-up therapies and many confident

headlines about breast cancer breakthroughs, the astonishing truth is that surgical treatment of breast cancer hasn't advanced one single step in the past century.

Dr Edward F. Scanlon, of Northwestern University Medical School, summarises the prevailing view: ". . . over a period of 100 years, breast cancer treatment has evolved from no treatment to radical treatment and back again to more conservative management, without having affected mortality" (JAMA, September 4, 1991).

The standard procedure for breast cancer this century has been a radical mastectomy, a mutilating operation which involves removing the breast plus much of the skin, the chest wall and the lymph nodes, developed by Dr William Halsted a hundred years ago. Shortly after World War II, a study at three hospitals in Illinois showed little differences in five- and 10-year survival rates with radical mastectomy, simple mastectomy or simple removal of the tumour. In 1969, The Lancet (November 29) reviewed 8000 cases and again found no differences in survival between any of the procedures. Nevertheless, the Halsted procedure maintained its grip on the minds of most surgeons well into the 1970s and 1980s when, in some areas, it was replaced by a modified radical mastectomy, which removed tissue and breast, but left the chest wall, or a simple mastectomy, which only removed the breast itself.

Like the earlier studies, numerous trials in the 1980s have shown that mastectomy provides no benefit in terms of cancer recurrence or survival over breast-conserving surgery (BCS), such as simple lumpectomy (removal of the tumour itself) or quadrantectomy (removal of a portion of the breast). In one study by the National Surgical Adjuvant Breast and Bowel Project in Pennsylvania, of nearly 2000 women over nine years, there were no significant differences in survival with no cancer spreading to other parts of the body between those who had undergone lumpectomy, lumpectomy plus irradiation or total mastectomy.

New research from the National Cancer Institute in Bethesda, Maryland, based on 247 patients confirms that lumpectomy and radiation were just as effective after 10 years in controlling early stage (I and II) cancers (N Engl J Med, April 6, 1995).

As a result of these comparative studies, the US National Institutes of Health (NIH) in 1990 recommended that surgeons opt for breast conservation surgery over mastectomy for the majority of women with stage I or II breast cancer. By this, they mean cancer less than four centimetres in diameter limited to a single breast, without involvement of the chest muscle or overlying skin. In the past, doctors felt that cancer found in the axillary lymph nodes was evidence that the cancer had spread and grounds for radical mastectomy.

With the NIH announcement, the involvement of lymph nodes (so long as it is on the same side as the tumour) is now considered immaterial.

Regardless of the NIH decision, most doctors don't offer BCS to the majority of women with early breast cancer. A Seattle study (JAMA, December 25, 1991) examined cancer registry information between 1983 and 1989. In total, less than a third of women with stage I or II disease were offered BCS. Furthermore, that proportion declined after 1985.

The Seattle study also found that doctors failed to offer radiation therapy to postmenopausal women and were more likely to recommend mastectomy to older than to younger women, even for the same stage of breast cancer. The more affluent and well educated the woman, the greater her chances of being offered BCS.

The lack of information or support by doctors for BCS may account for the suspicion with which many women view breast-conserving measures. This point of view is epitomised in a letter written by Dr Michael G. Sarr and others to the Journal of the American Medical Association (August 19, 1992): "Many view mastectomy as dealing with the problem immediately and completely, without postoperative radiotherapy. The acceptance, indeed preference, of mastectomy over breast-preserving surgery by the majority of our patients . . . implies that these patients adjust readily to the loss of the breast".

Indeed, several noted cancer specialists have attempted to demonstrate that women given mastectomies suffer no more psychological trauma than those undergoing BCS. Noted breast cancer specialist Michael Baum and others from London and Manchester studied the psychological outcome in women given mastectomies versus those given BCS (BMJ, September 22,

1990). The study found that about a quarter of those given either operation were depressed or anxious, and so concluded that "there is still no evidence that women with early breast cancer who undergo breast conservation surgery have less psychiatric morbidity [illness] after treatment than those who undergo mastectomy". Significantly, the study found that patients treated by surgeons who allowed them to choose were less likely to be depressed than those whose decision was made for them.

Besides your education or ability to pay privately, where you live has a lot to do with whether you are offered BCS or mastectomy. Two articles in the New England Journal of Medicine (April 23, 1992) showed a marked difference in the use of BCS in the US, depending on geographical area. Women were more likely to be offered BCS in the Northeast (17 per cent) or Mid-Atlantic states (20 per cent) than they were in the South (5.9–7.3 per cent). BCS was more on offer in urban than rural areas, and in teaching hospitals, large hospitals and those with on-site radiation therapy.

Interestingly, an editorial in the same issue pointed out that higher rates of conservation surgery were found in those 17 states with informed-consent laws requiring that doctors offer patients with breast cancer information about their treatment options.

Besides the problem of overtreatment, too much surgery might delay your doctor's ability to discover whether the cancer has spread. Dr Bernard Fisher and colleagues, from the National Surgical Adjuvant Breast and Bowel Project in Pennsylvania, reported on a nine-year study of 2000 women (The Lancet, August 10, 1991) comparing mastectomy to lumpectomy and found that either mastectomy or radiation therapy actually prevented the diagnosis of distant disease, but the recurrence of another tumour tends to be a "powerful" marker that the cancer could spread, thus aiding its early treatment.

Although the results of this study were found to be falsified, independent teams and more recent evidence confirmed that lumpectomy is just as efficient as radical mastectomy in controlling cancer.

Cell spread

Certain forms of surgery have also been found to help spread the disease.

Breast cancer tumours can spread during surgery. Surgeons who operated on 16 women found that six had more cancer cells circulating during the procedure.

They also discovered a link between cell-shedding and the density of the tumour. The woman with the densest tumour had the greatest number of cells circulating during the operation (Lancet, November 18, 1995).

Prostate surgery

Radical surgery to treat prostate cancer only succeeds in spreading the condition, new research has discovered.

Doctors had assumed that the poor survival rate after prostatectomy was because the disease was systemic, like other cancers. But researchers have discovered that the surgery itself can accidentally spread cancer cells to other parts of the body. They monitored 14 consecutive operations and discovered prostate cells in the blood of 12 of the patients afterwards. Only three had tested positive before surgery.

Researchers have recommended that surgeons should use a surgical technique called 'no-touch' when carrying out a prostatectomy (Lancet, December 9, 1995).

Researchers have also concluded that prostatectomy patients tend to have a better survival rate if they have an open prostatectomy (OP) rather than a transurethral prostatectomy (TURP). After studying records of 13,815 men who underwent prostatectomy between 1963 and 1985, they found a higher mortality rate among men one year after TURP, although there was a better mortality rate with TURP than with OP one month following surgery.

Researchers from the University of Oxford suggest that the mortality rate is not linked to either procedure *per se*, but probably to the general fitness of the patients (Lancet, December 9, 1995).

Colon surgery

Today, conventional medicine is beginning to believe it has something more substantial to crow about in its colon cancer treatments. "Cancer of the colon is a highly treatable and often curable disease," boasts a recent

US National Cancer Institute report. "Surgery is the primary treatment and results in cure in approximately 50 per cent of patients."

This crude figure is not, of course, quite what it appears, for 'cure' in conventional medical parlance means survival for at least five years. In fact, colon cancers are rarely 'cured' because there is a very high recurrence rate, hence the need for repeated surgical interventions. Most patients who contract colon cancer and submit to conventional medical treatment will ultimately die of the disease.

There's also growing concern among doctors that some surgical techniques may themselves hasten the advance of the disease. It is now realised that tumours can remain quietly subclinical—that is, not yet showing any symptoms—but can begin to grow after surgery as a result of the immunodepressive effects of the operation (Ann Chir, 1998; 52: 413–20).

There's also evidence that tumour cells may be released into the body during surgery, causing later metastases—tumours which develop from cancer cells that spread through the body (Ann Surg Oncol, 1998; 5: 390–8).

In particular, the new technique of laparoscopy has been called into question (Dis Colon Rectum, 1998; 41: 971–8). During laparoscopy, the endoscope is inserted into a small incision made in the wall of the abdomen, which introduces the risk of cancer cell 'spillage', thus potentially spreading the cancer.

Small wonder that a team of British oncologists—traditionally less bullish than their American counterparts—recently observed: "Despite advancement in surgical and anaesthetic techniques, there has been little reduction in mortality and morbidity from [colorectal cancer] over the past 25 years" (Eur J Surg Oncol, 1998; 24: 477–86).

The major problem with colorectal cancer is that, with or without surgery, the disease often spreads into other areas of the body—particularly the liver, lung and brain—where surgeons have a poor track record. So, preventing metastases by chemotherapy has been the primary goal of oncologists.

Hysterectomies

In some 40 per cent of hysterectomies, one or both ovaries and fallopian

tubes are removed as well. Conventional wisdom says that leaving a woman her ovaries after a hysterectomy is like leaving a cancerous time bomb inside her. This is not borne out by research. Among women who have ovarian cancer, only five per cent will have had a prior hysterectomy. Looked at from another angle, only 0.2 per cent of women who have a hysterectomy will go on to develop ovarian cancer (Fertil Steril, 1984; 42: 510–4).

Genetic susceptibility to ovarian cancer may be linked with susceptibility to other forms of intra-abdominal cancer. In one study where the ovaries of women genetically predisposed to ovarian cancer were removed as a just-in-case measure, more than 10 per cent developed some other form of intra-abdominal cancer (Lancet, 1982; 2: 795).

Studies show that when a premenopausal woman's ovaries are removed, she will often experience severe menopausal symptoms (Am J Obstet Gynecol, 1993, 168: 765–71). Even if the ovaries are preserved after hysterectomy, they are prone to early failure, leaving a woman with menopausal hormone levels at a much earlier age (Fertil Steril, 1987, 47: 94–100).

Often there is no medical indication for removal of the ovary—some hospitals simply require it, as a matter of policy, when a hysterectomy is performed. Women are generally not told this, so any woman considering hysterectomy should be clear about what the policy at her local hospital is and go elsewhere if necessary.

It is wrongly believed that a woman's ovaries stop functioning in her mid-40s—often the rationale for oophorectomy in older women. Yet, studies show that the older ovary continues to produce a hormone that, in menopausal women, is converted into oestrogen in the fat deposits in the body, thus continuing to protect the heart and bones (Fertil Steril, 1984; 42: 510–4). Synthetic hormones do not do the job as well. Thus, the ovaries should be preserved at all costs.

Other drugs

Tamoxifen

Besides surgery, medicine has experimented with a number of anticancer

drugs. Although there is no drug to kill off cancer completely, a number of hormone antagonists are supposed to stop hormone-dependent cancer from spreading.

The most popular of these is tamoxifen, used for breast cancer. Hopes were pinned on this drug as a preventative in healthy women until the drug underwent a study in Scotland.

The Scottish researchers discovered that women who have taken the drug for up to 14 years face a greater risk of developing thromboembolism, when a blood vessel becomes blocked by a clot. Paradoxically, the drug also reduces the risk of heart attack, although researchers at the University of Edinburgh warn that healthy women taking the drug should be carefully monitored.

Research in the US and UK, to test whether tamoxifen is an effective cancer preventative in healthy women, has been delayed following a rash of bad publicity surrounding the drug. As a result, few women were prepared to volunteer. A Swedish study in 1994 revealed that the drug could cause uterine cancer after long-term use, while later research also revealed a link with gastrointestinal cancer.

The US National Cancer Institute's (NCI) findings mirrored those of another Scottish study. NCI researchers found that women given daily doses of 20 mg of the drug for five years reported a 92 per cent disease-free survival rate compared with 86 per cent in patients scheduled to receive 10 years of tamoxifen therapy. Similarly, researchers from the Scottish trial reported a 70 per cent success rate among women given the drug for five years compared with 62 per cent among those who took it for longer.

NCI investigators were satisfied they had sufficient evidence: "The data, taken together with the results of the Scottish trial, provide no evidence of benefit for continuing tamoxifen beyond five years," they say (Lancet, December 9, 1995).

Breast cancer death rates in England and Wales have fallen by 12 per cent between 1987 and 1994. However, health officials who have been congratulating their extensive mammogram screening programmes as the reason for the sudden drop in breast cancer deaths need to think again. New research has discovered no evidence to link the two.

The National Cancer Registration Bureau believes the fall may be more likely associated with the increasing use of tamoxifen slowing cancer growth than with any screening.

Aspirin

Doctors have also been experimenting with a number of other drugs to treat or prevent cancer. Aspirin, which is now being hauled out to treat everything from headache to stoke, is the latest cancer preventative.

The latest recommendation is that people at high risk of developing cancer of the rectum or colon should start taking between four and six aspirin a week. A low-dose aspirin regime—using 325 mg each time—could cut the risk of colorectal cancer by half in the long term. Unfortunately, these benefits only start becoming apparent after 10 years of consistent use, and risks are halved only after taking aspirin for 20 years.

People who take aspirin run the risk of stomach-bleeding, but doctors say this is far outweighed by the benefits among high-risk groups, which include sufferers of inflammatory bowel disease, breast, ovarian or endometrial cancers, or a previous adenoma or large-bowel cancer. Others considered at high risk are those with a family history of colorectal cancer.

These findings are based on the major Nurses' Health Study, which has tracked the health of 121,701 nurses in the US since 1976 who have a known or suspected risk of developing breast cancer or heart disease. Researchers discovered that the women who consistently took four to six aspirin a week from 1984 to 1992 halved the risk of developing the cancer, and the risk continued to fall as the dosage increased, although cases of bleeding were reported in women who took more than 14 aspirin a week. Women who took two aspirin a week only saw a noticeable reduction of risk after 20 years; after four years' usage at these levels, there was virtually no benefit at all.

Although the research involves only women, researchers say the same benefits should be experienced by men. Researchers believe that aspirin indirectly blocks tumour growth, although they also accept that other factors could have been at play and that more research is needed (N Engl J Med, September 7, 1995).

Chapter 4
Alternative cancer treatments

What works?

Although many of the most promising alternative cancer therapies have been around for most of this century, there is a peculiar lack of scientific studies assessing them.

This situation is more a comment on the orthodox camp's paranoia about employing any new treatment against cancer (and thus admitting defeat or letting go of a multibillion dollar industry) than a statement about the efficacy of the treatment in question. Despite this climate of suppression, a number of alternative treatments have been the subject of some properly designed laboratory and clinical research. Although all would benefit from further study, they certainly appear more promising than most of the tools of orthodox medicine.

Cancer represents a healer's greatest challenge. It operates like an alien inside your body. Its biochemical laws are different from yours. It's able to completely disarm your immune system and, in effect, create an immunological shield to protect itself—all the while, it fires out substances that weaken the integrity of your cells and reproduces itself out of all control.

Supposed cures have been almost as ingenious as the disease itself. For example, they range from the well-documented cases of Dr Hugh Faulkner, who recovered from apparently terminal cancer by adopting a macrobiotic diet, to Norman Cousins, who laughed his way to wellness by watching Laurel and Hardy movies at home.

In between are the thousands of cases who improved by taking vitamins, changing their diet, adopting meditational techniques or by finding some form of self-expression. The use of nutrition and vitamins have also suc-

cessfully been used as treatments.

It bears repeating that the most important element to healing is a belief and certainty that your choice will work. Alternatives can be the preferred choice for those who want to play an active part in their own healing rather than being a passive patient.

Special thanks are due to the American writer Richard Walters, who helped compile some of this section from work originally done for The Townsend Letter for Doctors and Patients.

Nearly 10 years ago, the US government's Office of Technology Assessment published a report on the efficacy of alternative treatments. That report was widely denounced as biased and unscientific by many alternative patient groups and researchers alike in the field of cancer.

Alternative cancer therapies regard the tumour as a symptom. To the alternative practitioner, cancer is a systemic disease that affects the whole body. In holistic medicine, the body is a healthy, self-regulating organism which doesn't get sick unless something harmful is done to it. Instead of attacking the tumour, many alternative therapies aim to rebuild the body's natural immunity and strengthen its own ability to destroy cancer cells.

Most promising alternative treatments

Immuno-augmentative therapy

IAT involves the direct use of cytokines as a cancer therapy. Patients' blood is checked daily for any missing cytokines; if any are absent, they are harvested from blood donated by healthy volunteers and then infused into the patient.

Dr Lawrence Burton's Immuno-Augmentative Therapy (IAT) consists of injections of four blood proteins that augment immune system function and shrink tumours. Burton, former Senior Oncologist at St Vincent's Hospital in New York, astonished the medical world in 1966 when he and a colleague injected cancerous mice with a serum that caused the tumours to shrink by half in just 45 minutes. Ninety minutes later, the tumours had all but vanished. This unprecedented demonstration, made under ACS auspices in the presence of 70 scientists and 200 science writers, generated front-page headlines in major newspapers around the world. Burton

repeated the demonstration months later before an audience of cancer specialists at the New York Academy of Medicine, this time in a controlled experiment, with comparable results.

Burton opened a cancer clinic in Great Neck, New York, in 1974, and treated many patients who reportedly experienced dramatic tumour shrinkage or remission. Dr John Beaty of Greenwich, Connecticut, who sent 20 advanced-cancer patients to Burton, reported tumours regressing in 50 per cent. Despite these results, FDA harassment forced Burton to close his clinic in 1977 and open one in the Bahamas.

In 1985, US health officials of the NCI and Centers for Disease Control (CDC) falsely accused Burton's Bahamian clinic of using AIDS-contaminated serum on patients returning to the US. Under American pressure, the Bahamian Ministry shut down the clinic. It was only reopened when lawsuits were filed against NCI and CDC, and after Burton's patients appealed to members of the US Congress. These patients included the distinguished cancer surgeon Dr Philip Kunderman (former Chief of Thoracic Surgery, Roosevelt Hospital, New York), who stated that his own cancer was successfully controlled by IAT.

No clinical trials have been carried out on the therapy, but numerous anecdotal case reports show considerably enhanced survival times in advanced cases of colorectal cancer.

The therapy is now only available at a clinic in the Bahamas run by Dr John Clement. To date, 5500 patients have been treated there. Side-effects are nil.

One of the most promising cancer treatments today is tumour necrosis factor (TNF)—a blood derivative said to cause rapid tumour shrinkage. In the view of some observers, TNF came about as a direct result of Burton's original research.

Peptide therapy

Former professor at Baylor College of Medicine, Texas, Dr Stanislaw Burzynski, a Polish émigré physician (at 25, one of the youngest men in Europe ever to obtain an MD and PhD), developed a cancer treatment using peptides—building blocks of amino acids occurring naturally in

human blood and urine.

His research points to a severe shortage of these substances, called antineoplastons, in cancer patients. By reintroducing these peptides into the patient's bloodstream—either intravenously or orally with capsules—he found that they experienced tumour shrinkage or complete remission.

Harris Coulter described the role of pesticides discovered by Burzynski as tantamount to discovering a 'second immune system'. Unlike our ordinary immune system, which protects us against foreign 'invaders', this second internal system appears to guard against defective cells like cancer by 'reprogramming' them to develop normally again. In Burzynski's view, this means that cancer is a disease of incorrect information-processing such that cell reproduction goes haywire. The antineoplastons (anticancer compounds) which correct this bad programming appear to be deficient in cancer patients. Burzynski began to extract these substances from blood, tissue and urine, and developed a method of reintroducing them into the blood of people with cancer.

Unlike many cancer pioneers, Burzynski has published many of his findings, which have been confirmed by independent laboratories. He also has a five-foot stack of records and studies which he has submitted to the US FDA to attempt to get a 'new-drug' licence, and he's passed the first phase of the FDA's clinical trials. In the supporting study, the antineoplastons showed good results in patients with prostate cancer, bladder cancer and brain tumours; many had complete or partial remissions and one-fifth survived at least five years. Many of his original patients, he claims, are healthy 13 years later (paper presented at the Fifteenth International Congress of Chemotherapy, Turkey, 1988). In another study for the FDA's second phase of trials, Dr Burzynski gave his antineoplastons to 20 patients with advanced astrocytoma (brain cancer). Four patients achieved a complete remission and two others, a partial remission. Since the study began in 1990, two more patients have achieved partial and complete remissions, respectively (Adam D, ed, *Recent Advances in Chemotherapy*, Futuramed Publishers, 1992).

In a paper delivered at the 1986 International Cancer Congress, the world's most prestigious forum on cancer research, Dr Burzynski reported

five-year follow-up results in a clinical trial of his methods with advanced cancer. Forty-seven per cent of the patients experienced complete remission, 60 per cent had objective remission and 20 per cent survived over five years without cancer. Burzynski has published his results extensively in peer-reviewed medical literature. Confirmatory studies at major US medical centres are part of a large and growing body of evidence that antineoplastons are effective in treating human cancer patients.

Although Burzynski applied for drug approval, FDA dragged its feet for six years, after which—on the same day Burton's clinic in the Bahamas was shut—agents raided his institute, looking for vague 'violations' and seized all of his scientific, medical and personal records.

Although the FDA has now licensed Burzynski to administer his treatment at his own clinic in Texas, he was recently charged with violating laws of interstate commerce out of state (patients of his were simply ordering his medicine). He was later tried and acquitted of all charges.

Govallo immune therapy (VG-1000)

For many years, Russian immunologist Dr Valentin Govallo and his colleagues at the Immunology Laboratory in Moscow attempted to fight cancer by simply boosting the patient's immune system. However, in the 1970s, Govallo discovered similarities between a fetus's 'immunological shield'—which prevents it being attacked by its mother's immune system—and that of tumours, which similarly disable their host's defences. Govallo described the ability as akin to a "burglar who first turns off the burglar alarm before he goes about stealing things".

Govallo and his colleagues developed a means of suppressing the immune system of the tumour through a 'vaccine'—VG-1000—using tissue from healthy human placentas harvested after live births. According to Govallo, if you suppress the tumour's immunity, "even a dying patient can overcome the tumour". Dr Govallo discovered that an extract of human chorionic villi, when added to a test tube of white blood cells, "effectively blocks all reactions of cell immunity" (Cancer Chronicles, 1994; 5: 3).

Since 1974, Govallo has treated approximately 100 patients. He has documented evidence that the 10-year survival rate for those with advanced

cancer is about 60 per cent (V. Govallo, *The Immunology of Pregnancy and Cancer*). Of 45 patients with advanced cancer treated in 1974, 29 are still alive—a survival rate of 64.4 per cent. He says that VG-1000 is most effective against breast, lung, colon and kidney cancer, malignant melanoma and brain tumours.

Currently, Dr John Clement, of the Immunology Research Center in Freeport, Bahamas, and medical historian Harris Coulter have developed a protocol for the scientific evaluation of VG-1000 with a clinical trial, which began in September 1996. Coulter emphasises that VG-1000, like other immune therapies, works best in patients who have not been extensively treated with radiation or chemotherapy. Patients with metastastic liver cancer should not undergo this treatment; in one instance, a patient with this disease developed reactive hepatitis.

Gerson therapy

German-born Dr Max Gerson's programme is a low-fat, salt-free, meat-free diet including organically grown fresh fruits and vegetables, and 13 glasses of freshly squeezed juices daily, at hourly intervals.

Gerson famously realised more than 50 years ago that the high sodium–potassium ratio of the modern Western diet was riotously out of kilter. He also introduced detoxifying with coffee enemas, which stimulate the liver and large intestine to excrete toxic elements from the body.

A 1990 Lancet evaluation of seven Gerson patients with extensive metastasised cancer at Maudsley and Hammersmith Hospitals in England revealed that three patients were in complete remission. Patients also reported a high degree of control over the treatment, low pain scores and little requirement for drugs (Lancet, 1990; 336: 667–8).

Other evidence of the success of Gerson therapy is decidedly mixed. In one 1995 study of patients with melanoma, every one of the stage I and II, and 82 per cent of stage III, patients survived for five years. Among those undergoing conventional treatment, only 39 per cent with stage III disease survived for the same length of time (Altern Ther, 1995; 1: 29–37).

However, in a 1994 study of 22 patients, mostly with advanced disease, who'd been unsuccessfully treated with chemotherapy, radiation and

surgery, all died within an average of seven months. In another study of 18 patients, all but one died within nine months, even though less than half had had advanced cancer when they arrived at the clinic and six hadn't undergone any conventional treatment (J Nat Med, 1994; 5: 745–6).

Coley's toxins

At the end of the last century, Dr William Coley, a young New York surgeon, discovered that one patient with bone cancer had survived the cancer because he'd contracted an infection with *Streptococcus pyogenes*, a life-threatening skin disease. Coley spent the next 40 years refining what came to be known as Coley's toxins—using byproducts of *S. pyogenes* plus *Serratia marcescens*, which help to intensify the activity of *S. pyogenes*. What appeared to happen was that the patient's temperature and pulse rapidly rose—sometimes by as much as six degrees. In the view of author and journalist Dr Ralph Moss, the toxins work as a kind of heat therapy "pushing the immune function to the limit of excitability". Scientists at the National Cancer Institute have discovered that a lipopolysaccharide is contained in these toxins, which appears to stimulate the immune system to produce tumour necrosis factor (TNF)—which kills cancer.

Coley's daughter, Helen Coley Nauts, who has spent many years tabulating and publishing her father's results of nearly 1000 cases, shows that 45 per cent of patients with inoperable tumours and 50 per cent of those with tumours that were operable were considered cured (that is, survived for at least five years). The best results were with giant cell bone tumours and breast cancer—79 per cent of inoperable bone cancer patients and 87 per cent of the operable patients were cured and, among those with breast cancer, 65 per cent of inoperable patients and all of the operable patients were considered cured (Cancer Surv, 1989; 8: 713–23; Prog Clin Biol Res, 1983; 107: 687–96).

A controlled clinical trial at New York University Medical Center in 1962 concluded that the Coley therapy "has definite oncolytic [cancer-destroying] properties and is useful in the treatment of certain types of malignant disease".

Kelley's treatment

Dr William Kelley, an orthodontist by training, treated cancer patients for 20 years. Kelley believed that the pancreas, rather than the immune system, plays a critical role in cancer. Studies in the clinical literature lend some support to the theory that pancreatic enzymes not only serve a digestive function, but also circulate in the bloodstream and kill cancer cells.

Kelley's treatment includes large doses of pancreatic enzymes, vitamin and mineral supplements and fresh, preferably organic, foods. One of 10 basic diets—some vegetarian—is prescribed to suit the patient's condition. Part of the treatment involves detoxification, assisted by coffee enemas, on the principle that caffeine administered rectally opens the bile ducts and releases accumulated toxins.

Dr Nicholas Gonzalez, a private physician in New York, analysed the medical records of 455 patients with a total of 26 different types of cancer treated by Kelley. Many patients, he says, were alive five, 10 or 15 years after having been diagnosed as terminal by orthodox doctors. Of the five with inoperable pancreatic cancer, four are still alive (the fifth died of Alzheimer's disease) after a median survival of 8.5 years; the conventional survival rate for this kind of cancer is three to six months.

Macrobiotics

A macrobiotic diet emphasises whole cereal grains, beans, fresh vegetables, fruits, nuts, seeds, sea vegetables and, occasionally, fish. Case histories of people who apparently reversed their cancers through this diet and lifestyle changes can be found in literature available from the Kushi Institute (Brookline, Massachusetts). Macrobiotics is rooted in the ancient Chinese principle of complementary yin–yang forces. According to Michio Kushi, by rebalancing the body, some cancer cells are destroyed and others are changed to normal ones.

Interestingly, the high-fibre, low-cholesterol, low-fat diet long advocated by a number of alternative cancer therapists shares many similarities with the diet recommendations only recently set forth in major reports of the National Academy of Sciences, the ACS and the NCI.

Urea

The notion that human urine has anticancer properties has been around at least since World War II. However, the idea has undergone a revival since the late 1950s, with the work of Dr Evangelos D. Danopoulos, professor of medicine at the Medical School of Athens University and a specialist in optical oncology.

The active ingredient in urine is urea, which appears to disrupt the water system on the surface of cancer cells, which treat water differently from normal cells, thus interfering with the metabolism necessary for uncontained metastasis.

In one of his many studies, Dr Danopoulos discovered that, of 46 patients with cancer in or around the eye who were treated with surgery and local urea injections, the treatment was successful in all cases. Ordinarily, conventional medicine almost never achieves a cure or remission (Ophthalmology, 1979; 179: 52–61). In another study of nine people with cancer of the mucous membrane inside the eyelid, eight of the nine given local applications of urea were cured (Ophthalmology, 1979; 178: 198–203). Eighteen patients with liver cancer given urea survived 26.5 months, five times longer than expected (Clin Oncol, 1981; 7: 281–9), as did 28 liver cancer patients, 17 with cancer that had spread (Clin Oncol, 1975; 1: 341–50).

Most recently, Dr Danopoulos replaced his injected urea with a powdered variety, which is covered by an airtight dressing after scraping the cancerous tumour. He has achieved a cure rate as high as 96 per cent (Lancet, 1974; *i*: 132).

Dr Danopoulos discovered that creatine monohydrate has similar anticancer properties to urea, but is broken down more slowly into creatinine. By using urea and creatine, Dr Danopoulos found that he could keep blood levels of urea nitrogen (which fights the cancer) more consistent than with urea alone.

Oxygen therapies

At a time when orthodox medical research has begun to admit that it is losing the war against cancer, it is bizarre that a simple treatment used

successfully by doctors around the world to treat cancer as well as heart disease and HIV/AIDS is virtually ignored, particularly when it has been shown to be effective.

Oxygen is so obviously vital to life that the role of chronic, subclinical oxygen deprivation and its contribution to the development of disease is often overlooked. As long ago as 1931, the German doctor Otto Warburg, a director of the prestigious Max Planck Institute for Cell Physiology in Germany, won his first Nobel Prize for discovering the fundamental importance of oxygen transfer in cell respiration, and his second for discovering the enzyme that transfers hydrogen as a further part of this vital process.

In his book, *The Prime Cause and Prevention of Cancer* (Wurzburg: K Tritsch, 1966), Dr Warburg made no bones about the fact that a perversion of the cell oxygenation process is at the heart of cancer development.

"Cancer, above all other diseases, has countless secondary causes, but there is only one prime cause. . .the replacement of the normal oxygen respiration of body cells by an anaerobic [oxygen-lacking] cell respiration."

Warburg showed that cancer cells start through a lack of oxygen at the cellular level. When cells cannot get sufficient oxygen, they begin to feed off themselves in a sugar fermentation process that becomes progressively disruptive, leading to a toxic environment in which cancer and other illnesses, triggered by viruses and parasites, can thrive. Cancer cells cannot exist in a high-oxygen environment.

Bacteria and parasites in the gut can be classified into two types: the beneficial varieties, such as *Lactobacillus acidophilus* and *Bifidobacterium*, which are mainly aerobic, and the harmful types, such as *Escherichia coli*, *Staphylococcus* and *Helicobacter pylori*, which are anaerobic. With sufficient oxygenation, the beneficial bugs thrive while the harmful ones are kept under control. But if the oxygen saturation in the cells falls below a critical level—around 60 per cent—the reverse occurs. If this situation becomes chronic, a host of diseases may develop.

For more than 100 years, doctors around the world who understand the role of oxygen in good health have made use of a number of biooxidative therapies, mainly ozone, hydrogen peroxide and hyperbaric oxygen.

Only now are these therapies starting to attract mainstream interest, partly because of the problems of antibiotic resistance and 'superbugs'. At present, they are the subject of some 50 to 100 references appearing in medical journals worldwide each month.

Ozone

In nature, ozone is formed in the atmosphere when ultraviolet radiation forces oxygen to recombine temporarily in groups of three atoms (O_3) as an energised form of oxygen, which quickly reacts with other substances. It is also produced during an electrical storm, causing the characteristic fresh smell afterwards.

Ozone is produced commercially in ozone generators, which use an electrical charge through a condenser, and has been used to purify water since 1860, when the first treatment plant was built in Monaco. Today, over 1000 cities use ozone to treat their drinking supplies.

Ozone is used by the bottling, pharmaceutical and food industries as a disinfectant. It is used to clean up polluted lakes or rivers, which it does far more effectively than chlorine and without killing animal life or leaving harmful chemical residues. Ozone is also an effective air cleaner and remover of noxious odours.

During World War I, the Germans used ozone to treat wounds and infections. In the 1930s, German scientists and doctors carried out considerable research into its effects, using it to successfully treat Crohn's disease, ulcerative colitis, inflammatory bowel disease and chronic bacterial diarrhoea.

A German dentist, Dr E.A. Fisch, first used ozonated water as a disinfectant; one of his patients, surgeon Dr Erwin Payr, in 1945 pioneered the method of injecting ozone intravenously to treat circulatory problems.

Another German, physicist Joaquim Hansler, developed the first medical ozone generator that could produce oxygen and ozone in the correct therapeutic doses, and the company he founded is now the largest manufacturer of medical ozone generators in the world. The advances by German doctors in this field led to Dr W. Zable in the late 1950s becoming the first to treat cancer with ozone, while Dr Horst Kief, based near Frankfurt, is probably the first to use it to treat HIV.

Today, an estimated 9000 licensed health practitioners in Germany and another 8000 practitioners throughout Europe use ozone. It is generally given by way of the rectum, injection, autohaemotherapy (where blood is extracted, treated, then returned to the body), steam cabinet, body bag, ozonated water or, under special conditions, inhalation.

An estimated 10 million ozone treatments have been given to more than one million patients in Germany alone over the last 40 years. Despite this extraordinary record, the US Food and Drug Administration has a history of harassing doctors who use ozone generators, which are currently outlawed in many states. Until recently, the FDA has refused to allow human trials of ozone therapy to be carried out (McCabe E, *Oxygen Therapies*, Energy Publications, 1988; available in the UK from Resonance, tel: 01803 840 008). Clinics were closed down and doctors threatened with having their licences revoked if they used ozone or hydrogen peroxide.

Perhaps the best known case is that of Dr Robert Atkins, director of the Atkins Center for Complementary Medicine in New York, who had his licence revoked by the FDA for treating patients with ozone. In 1993, his successful court case against the state of New York to regain his licence resulted in the passing of a law permitting physicians to use ozone and other non-FDA-approved techniques (Altman N, *Oxygen Healing Therapies*, Healing Arts Press, 1998).

Many of the battles to get these therapies recognised are recorded in the award-winning 1993 documentary 'Ozone and The Politics of Medicine', produced by Geoffrey Rogers of Threshold Film, based in Vancouver, BC (tel: 001 604 873 4626) and available on video for around £20 (Can$35).

According to the leading US authority in medical ozone, Dr Frank Shallenberger (Altman N, *Oxygen Healing Therapies*), ozone and hydrogen peroxide therapies work because they:

- stimulate production of white blood cells, which are necessary to fight infection
- are virucidal
- increase oxygen and haemoglobin disassociation, thus increasing delivery of oxygen from blood to cells
- are antineoplastic, inhibiting the growth of new tissues such as tumours

- oxidise and degrade petrochemicals
- increase red blood cell flexibility, thus allowing them to squeeze through the smallest blood vessels
- increase the production of interferon and tumour necrosis factor, used to fight infection and cancer
- increase the efficiency of the antioxidant enzyme system, which scavenges excess free radicals
- accelerate the citric acid cycle, the main cycle for liberating energy from sugars which, in turn, stimulates basic metabolism
- increase tissue oxygenation, which brings about improvement in the patient's symptoms.

By flooding the body with oxygen, these therapies aim to maximise the biological 'combustion' of both energy supplies and toxins through proper oxidation, enabling elimination of toxic substances and boosting of the immune system.

Factors leading to oxygen deficiency include devitalised food, poor breathing technique, lack of exercise and air pollution. Today, the amount of oxygen in the air ranges from 19 to 21 per cent. In Japanese cities, it can be as low as 15 per cent, leading to oxygen booths on the streets and shops that sell oxygen cylinders.

Hyperbaric oxygen

This therapy uses 100 per cent pure oxygen administered at two to three times the normal atmospheric pressure in a special chamber. When oxygen is dissolved in the blood, the increased oxygen is delivered directly to tissues. This is best known for its use in treating carbon-monoxide poisoning, gas gangrene and decompression in divers, known as the 'bends'.

However, hyperbaric oxygen (HBO) therapy is now increasingly being used as an adjunct to standard medical care because it not only reduces swelling or oedema, but also produces antioxidant effects and stimulates new blood vessel formation where the blood supply is limited. It is now used to treat anaerobic infections, bone infections, difficult wounds, crush and soft-tissue injuries, burns, skin grafts and radiation injuries.

HBO has proved useful in treating diabetes, vascular disease, cancer

patients undergoing irradiation, and in those recovering from cosmetic, plastic and laser surgery. Research is now looking at its use in stroke, HIV-linked disorders and chronic fatigue syndrome. It is also being used for treating sports injuries, and some believe that it enhances athletic performance. Some 26 centres in the UK now offer this therapy.

Hydrogen peroxide

Created in the atmosphere when ultraviolet light strikes oxygen in the presence of moisture, hydrogen peroxide (H_2O_2) is a clear, colourless liquid that mixes easily with water. It is involved in all of the essential processes of life, including the immune system, and is produced in the body of all higher organisms. It is the body's first line of defence against viruses, bacteria, parasites and yeasts, as it carries an extra molecule of oxygen that is let loose to attack these invaders, which are killed by oxygen.

Hydrogen peroxide is produced by granulocytes, the white blood cells that fight infection. It is also necessary to help metabolise carbohydrates, proteins, fats, vitamins and minerals, and regulates the production of oestrogen, progesterone and thyroxin. In addition, it assists in regulating blood sugar and energy production in cells.

For many years, H_2O_2 has been used as an antiseptic, disinfectant and oxidiser. One of its special qualities is its ready ability to decompose into water and oxygen.

Hydrogen peroxide has been found in many of the world's healing springs, including Lourdes in France and, most recently, it has been used to treat a wide variety of diseases, with few side-effects.

It is usually administered orally, intravenously or by injection into joints and soft-tissue trigger points in the form of 35 per cent food-grade H_2O_2 .

According to the book *The UnMedical Miracle—Oxygen* by Elizabeth Baker (Delwood Communications, PO Box K, Indianola, WA 98342), H_2O_2 (as well as oxygen and ozone) was a widely used therapy for all sorts of illnesses in the 1920s. According to Baker, it only fell into disuse after the advent of penicillin, when drug companies worked hard to steer doctors towards the use of pharmaceuticals.

The theory behind H_2O_2 therapy is that it is used to supplement the body's own supply of oxygen which, says Baker, has fallen from 30 per cent to 19 per cent today (and as low as 12 per cent in some cities).

The medical literature of the turn of the century is filled with successful treatment with oxygen therapy, particularly H_2O_2. Numerous medical articles are beginning to advocate the use of 'peroxidation' in medicine. In an article in The Lancet (November 12, 1988) T.G.L. Dormandy, of the Department of Chemical Pathology, Whittington Hospital in London, argued that the notion of peroxidation (in connection with free radicals) has had a bad press. Far from always being evidence of damage, he says, this 'self-destruct' mechanism in cells is necessary to health; failure of cells to burn themselves up and be regenerated leads to cancer.

Most proponents of H_2O_2 give it intravenously because it has been shown to cause venous oxygen embolism (air bubbles) when used in liquid form to irrigate surgical wounds or closed body cavities (BMJ, 1985; 291: 1706). Certain dilutions taken orally have also been shown to cause tumours in animals (GANN, 1981; 72: 174–5). However, when injected at the right percentage, it quickly breaks down into oxygen and water. A recently published article from the American Journal of Cardiology (1993; 52: 673–5) echoed the results of numerous other studies in the 1960s showing that a 0.2 per cent solution of intravenous H_2O_2 can be given safely, usually with the drug heparin to avoid venous inflammation.

At a conference in 1989, a leading proponent of H_2O_2 therapy, Dr Charles H. Farr, founder of the International Bio-Oxidative Foundation in Dallas, cited many studies in the medical literature showing that H_2O_2 can benefit patients with many chronic degenerative diseases, and anecdotal reports of its success against *Candida albicans*, ME and multiple sclerosis. In addition, he provided anecdotal and referenced studies of its use on cancer cells. At least one study has shown its antitumour effects on cells in the laboratory (J Exp Med, 1981; 154: 1539–53).

Farr concluded (as have other studies) that, when combined with radiation therapy, H_2O_2 can enhance the effect and spare normal tissue from the effects of radiation. As for its use alone, he says: "By itself it has an antitumour effect. . .but response is slow and changes are subtle. Responses

were noted in colorectal carcinoma and malignant lymphoma". He notes, however, that there may have been problems in the studies and that larger ones, particularly double-blind studies, need to be done.

In one study, 190 patients were selected with such advanced cancer that they were considered beyond conventional treatment. In fact, less than a tenth of them were expected to survive for more than a year. After employing H_2O_2 with radiation, 77 per cent were alive after a year, two-thirds after two years, nearly a half after three years and one-quarter after five years. The best responders had cancers of the cervix, bladder, head or neck (Am J Surg, 1964; 108: 621–9).

Farr finds the most successful treatment combines H_2O_2 therapy and high doses of vitamin C with chelation treatment, which removes the toxins of cancer from the body.

As a cancer treatment

As the double-Nobel-Prize-winner Dr Warburg showed, cancer cells cannot exist in a high oxygen environment. In 1974, one study reported that such cells are inhibited by peroxide (Erfahrungs-heilkunde, 1974; 23: 178–81). This was confirmed in an English publication in 1980, when Dr Frederick Sweet and his colleagues reported laboratory evidence showing that ozone selectively inhibits the growth of cancer cells (Science, 1980; 209: 931–2).

In the US, early cancer research in the 1960s at Baylor University in Dallas, Texas, by Dr J.W. Finney and associates showed the value of H_2O_2 as an adjunct in treating cancer by making cancer cells more sensitive to irradiation (South Med J, 1962; 55: 230–2). A further study demonstrated the value of H_2O_2 in shrinking the size of tumours (Cancer, 1965; 18: 1250).

A Japanese study of 15 patients confirmed that H_2O_2 enhanced the effect of an anticancer agent (Yonago Acta Med, 1967; 11: 149) while researchers in New York reported in 1981 that H_2O_2 contributed to the destruction of tumor cells by macrophages and granulocytes in cell cultures (J Exp Med, 1981; 154: 1548).

More recently, researchers at the University of California investigating effects on Hodgkin's disease observed that low levels of H_2O_2 were suffi-

cient to kill a substantial number of Hodgkin's disease-infected cells *in vitro* after only 15 minutes of incubation (Cancer, 1989; 63: 2114).

One of the first reports of successful treatment of cancer using ozone in patients was reported by Dr Joachim Varro at the Sixth World Ozone Conference in 1983, published in Medical Applications of Ozone (LaRaus J, ed, International Ozone Association, 1983, pp 94–5). Dr Varro reported that the patients experienced increased appetite, greater strength, higher rates of physical activity and a reduction in pain. He stated that patients were "free of metastases and tumour relapses for remarkably long periods of time; survival time could be prolonged, far exceeding the usual dubious prognoses, even in cases of inoperability, radiation resistance, or chemotherapy non-tolerance, and with improved quality of life. Most patients who had undergone the combination therapy shortly after surgery and radiation could return full time to their occupations."

Italian researchers at the University of Siena suspected that the anti-cancer effects of ozone were due in part to its ability to induce release of tumour necrosis factor (TNF). Their hunch was confirmed when they measured ozonated blood and observed that most of the TNF was released immediately after ozonation took place (Lymphokine Cytokine Res, 1991; 10: 409–12).

At the Hospital Santa Monica in Mexico, founder Dr Kurt Donsbach uses intravenous H_2O_2 extensively to treat cancer patients. He claims that, of the thousands he has treated, the majority make a complete recovery. In his highly recommended book *Oxygen Healing Therapies*, author Nathaniel Altman visited the hospital and asked Dr Donsbach about survival rates.

"Approximately 70 per cent of our patients are alive three years after their first visit. . . .very few of these patients had more than months to live according to their doctors when they arrived. . .a significant percentage of our patients become totally and completely cured," he said.

A similar view was given when Altman visited Dr Horst Kief's clinic in Germany in 1993. The reported long-term remission rate for cancer patients was given as 60 per cent, with another 20 per cent experiencing an improvement.

In their book *The Use of Ozone in Medicine* (Haug Publishers, Heidelberg,

1987, updated 1994), Drs Siegfried Rilling and Renate Viebahn state that doctors have used ozone therapy in angiology, dermatology, gastroenterology, gerontology, intensive care, gynaecology, neurology, odontology, oncology, orthopaedics, proctology, radiology, rheumatology, surgery and urology.

If you do opt for oxygen as a cancer treatment, work only with someone highly experienced in giving such treatment to patients, since the wrong infusion of oral or liquid concentration is potentially dangerous.

Mushroom therapy

Since 1965, when the mushroom *Coriolus versicolor* was first reported to relieve stomach cancer, research has confirmed that the mushroom has antimicrobial, antiviral and antitumour properties. A polysaccharide called Krestin (PSK) in the mushroom's thread-like extensions has been found to be responsible. PSK is currently used as a cancer treatment in Japan, principally in conjunction with surgery, chemotherapy and / or radiation.

Research has shown that healthy people given a one-gram daily dose experience significant cellular immune response within 12 hours. Cancer patients show marked improvements in immunity with a three-gram daily dose.

Although side-effects to *C. versicolor* are infrequent, they can include nausea, vomiting, diarrhoea, skin pigmentation, anorexia, anaemia, liver dysfunction, leukopenia and thrombocytopenia.

In one randomised, controlled trial comparing PSK treatment with placebo in more than 100 patients after surgery for colorectal cancer, the number of patients in remission and surviving at 10 years was significantly higher in the PSK group than in the placebo group (Cancer Immunol Immunother, 1990; 31: 261–8). In another trial of more than 400 patients, again after colon surgery, the overall survival rates of the PSK group were better than those given chemotherapy (Dis Colon Rectum, 1992; 35: 123–30).

A further study found that natural-killer cells were activated by PSK and increased in number, and the proportion of helper cells was also increased proportionately (Biotherapy, 1992; 4: 117–28).

Essiac therapy

In 1922, René Caisse, head nurse at a hospital in Ontario, Canada, began treating cancer patients with a herbal formula based on a remedy used by a medicine man in the Ojibwa tribe. The formula consists of four main ingredients: burdock root (*Arctium lappa*), slippery elm bark (*Ulmus rubra*), sheep's sorrel (*Rumex acetosella*) and Turkish rhubarb root (*Rheum palmatum*), together with small additions of blessed thistle (*Cnicus benedictus*), red clover (*Trifolium pratense*), watercress and kelp. Nurse Caisse called it 'Essiac'—her own name spelled backwards.

No completed formal studies have been documented. However, testimonials provided to the Canadian Royal Cancer Commission in 1938 showed that, in eight patients with confirmed cancer, positive outcomes in two were attributed to Essiac. In 1959, experiments at the prestigious Memorial Sloan-Kettering Hospital in New York showed Essiac produced "definite and pronounced changes" in cancer-prone animals.

In the laboratory, burdock has been found to decrease the carcinogenic properties of certain chemicals (Mutat Res, 1984; 129: 25–31).

Revici therapy

In the 1920s, Dr Emanuel Revici developed a system of chemotherapy based on lipids combined with various other elements, such as selenium and omega-3 fatty acids derived from fish oils. This treatment has been provided by the Institute of Applied Biology in New York since 1947.

Although there are no published assessments of Dr Revici's clinical records, one unpublished manuscript reported a 48 per cent positive response in 186 colon cancer patients (Ravich R, 'Evaluation of 1047 patients with advanced malignancies treated from 1940–1955').

Mistletoe

Mistletoe (*Viscum album*), a tree parasite, has been revived in cancer therapy—particularly in Germany. One laboratory study has demonstrated significant effects with mistletoe extracts on blood taken from cancer patients. Different extracts were found to stimulate the production of cytokines and tumour necrosis factor, suggesting powerful immune system-enhancing

properties (Arzneimittelforsch, 1998; 48: 1185–9).

MTH therapy

MTH is an immunotherapy agent developed by Dr Laszlo K. Csatary, a Hungarian physician who believed that viruses could be harnessed into the war against cancer. By chance, he came across a chicken farmer in Hungary with advanced gastric cancer whose disease had completely regressed after his flock experienced an outbreak of Newcastle disease. Dr Csatary developed a live strain of Newcastle disease virus (NDV) and began using it as a vaccine in cancer patients; he called it MTH-68.

There have been two clinical trials documenting the effects of MTH on colorectal cancer. The first studied patients whose cancer had spread to their liver. After liver surgery, 23 patients received a modified MTH vaccine five times at 14-day intervals, followed by a booster shot three months later.

After a follow-up of at least 18 months, 39 per cent of the MTH group had no tumour recurrence compared with only 13 per cent of a matched set of controls (Ann N Y Acad Sci, 1993; 690). A more recent trial found that, two years after MTH treatment, only three per cent of colon cancer patients had died compared with 23 per cent of a matched untreated group (Proc Ann Meet Am Assoc Cancer Res, 1995; 36: A1336).

Side-effects of the treatment include mild, transient, flu-like symptoms and delayed hypersensitivity-type skin reactions.

Dr Hamer's conflict theory

Unlike most other practitioners, the work of the German cancer specialist Dr Ryke Geerd Hamer concentrates almost exclusively on the causes of cancer. Once the cause is recognised and faced, the cure will follow, he argues, as the body's own remarkable self-healing processes are freed to come into play.

Although many have testified to the success of his approach, he has been persecuted by the German authorities, who have attempted to outlaw his work and stop his practising.

In simple terms, Dr Hamer believes that all cancers have been precipi-

tated by a conflict. In the case of breast cancer, the shock or trauma would have occurred two to four months prior to the clinical detection of the cancer if the woman is right-handed. Cancer of the left breast would have been triggered by a perceived general conflict between a mother or child, a conflict within the family or 'nest', or if the husband becomes ill or infirm. Cancer of the right breast, again in a right-handed woman, would be triggered by a conflict with humanity in general or with a partner. In left-handed women, the triggers are reversed.

Dr Hamer has proved scientifically, his supporters say, that conflict creates a grey stress focus in the brain the size of a thumbnail. The location of the stress in the brain determines the type of cancer that will develop.

A conflict or trauma may not seem particularly earth-shattering, certainly not to an observer, but the sense of helplessness and of being trapped that accompanies this stress seems to be a universal phenomenon among victims, according to Hamer.

There are also 'hanging conflicts', as Hamer calls them, which hover in a person's background and never quite come to the surface, such as a long-held hurt.

The patient will become clear of the cancer when he or she identifies the conflict and is given the correct support on all levels—physical, mental, emotional and spiritual. No chemotherapy is needed, and Hamer regards morphine as being detrimental to the whole system. This can cause fresh conflicts and even lead to death, he believes.

Shark cartilage

Great things have been claimed for shark cartilage as a cure for cancer. Much of the existing literature on the product tells the same story. In 1975, scientists at Harvard Medical School isolated something in cartilage which prevents the growth of the tiny blood vessels that feed the tumour (angiogenesis) and which could inhibit capillary growth by 75 per cent (J Exp Med, 1975; 141: 427–39).

The following year, the same scientists discovered that cartilage contained several different proteins and that the major one strongly inhibited the activity of protein-digesting enzymes (Sci Am, 1976; 234: 58–64). A pro-

fessor at Massachusetts Institute of Technology (MIT) suggested that cartilage from calf shoulder blades would also be suitable (Science, 1976; 193: 70–2). But, because calves' bodies contain only minute quantities of cartilage, a new source was needed, which is where sharks, whose whole internal structure is made of cartilage, came in.

Science met marketing at this point. *Sharks don't get cancer*, we were told and "now one of man's oldest and deadliest enemies holds the key to overcoming one of modern man's most dreaded enemies". But a close look at the evidence for these claims is instructive.

Claims for shark cartilage are based mostly on *in vitro* studies using chicken eggs as a model. Others are based on animal studies (Proc Natl Acad Sci USA, 1980; 77: 4331–5). Still others are based on studies on sharks which have been injected with cancerous cells to see if they would develop cancer—some did, and some didn't (J Pharmacol Sci, 1977; 66: 757–8).

Stopping angiogenesis does not cure cancer, not even in test tubes. MIT scientists concluded that cartilage "does not interfere with the growth of the tumour cell population directly". Instead, it simply prevents tumour growth by slowing the formation of new blood vessels (Proc Natl Acad Sci USA, 1980; 77: 4331–5).

Judah Foulker's work on angiogenesis is often quoted as proof that shark cartilage works. But even Professor Foulker is clear that "*in vitro* assays do not accurately predict antiangiogenic efficacy *in vivo*"—in other words, what happens in the test tube does not necessarily reflect what happens in the body (DeVita VT et al, eds, *Cancer Principles & Practice of Oncology,* Lippincott–Raven, 1997).

Books like I. William Lane's *Sharks Don't Get Cancer* can be frustrating for those trying to discover the true picture. For instance, Lane quotes several small, but apparently impressive, studies supporting the efficacy of shark cartilage but, inexplicably, none of these are to be found in the references at the back of the book.

While the animal studies at least used controls (allowing direct comparisons to be made between those treated and those not), the human studies to date amount to nothing more than case reports. For instance, Lane reports a 1992 study in Mexico by Roscoe van Zandt in which eight

women with advanced breast tumours all showed improvement after receiving shark cartilage. Similarly, of two patients in Panama with terminal cancer, one with less severe liver cancer went into remission, but the fate of the other with lung cancer which had spread to the bone and brain, was more vague.

Case studies from elsewhere in the world, including unpublished data from Lane on the efficacy of anal administration, tell a similar story. It is too easy to claim a 50 per cent success rate when a study has only a handful of people in it. But based on these results, US television seized on shark cartilage with enthusiasm. The well-respected programme '60 Minutes' followed 27 patients in Cuba and the results, again unpublished, were even more vague: cessation of pain, and improvement in appetite, attitude and quality of life. Nowhere does it say how long they stayed alive.

Dr Lane is not a medical doctor; his PhD is in agricultural biochemistry. His company produces some of the leading shark cartilage products on the market, so he is hardly an impartial observer. Because shark cartilage is not a drug, it cannot be regulated and MIT has found that several commercially available products are without any significant potency.

Most of the supplements sold over the counter are for oral use whereas most of the clinical studies have involved injecting the cartilage. Human studies have been performed using both oral and anal administration. While it is clear that there may be something in shark cartilage which does help fight cancer, there is no evidence that over-the-counter products in the form of tablets, pessaries or milkshakes provide what has now been named cartilage-derived inhibitor (CDI) in the quantity or form which will deliver what it promises.

The manufacturer of one leading brand of shark cartilage, Cartilage Technologies Inc (CTI), discontinued its sponsorship of an FDA-supervised clinical trial to evaluate shark cartilage as a treatment for cancer. A spokesman for CTI said the company was "unable to find meaningful scientific data to support further investment in pursuing drug status for shark cartilage" (Townsend Lett Docs, April, 1997; 26). CTI went on to state that it "does not promote its product as a cancer cure and finds it difficult to understand any company that would market a dietary supple-

ment for the treatment of cancer, especially when there is no basis".

Germanium

Germanium is a biological-response modifier, which means it helps the body modify its response to tumours. It appears to allow the transport of extra molecules of oxygen into individual cells and, as cancer cells can't metabolise oxygen, this could stop their growth or return them to normal. Its most important function may be to enhance the production of our own interferon, a recognised powerful anticancer agent (Tohoku J Exp Med, 1985; 146: 97–104).

In a double-blind placebo-controlled study in Japan of patients with inoperable lung cancer, patients receiving germanium in addition to chemotherapy or radiation had a higher response rate and improved survival time. The treatment worked best on small cell cancers. At least 13 animal studies show evidence of antitumour activity (Int Clin Nutr Rev, 1987; 7: 11–20).

Nevertheless, the downside is that the inorganic form of germanium can cause kidney damage (Renal Failure, 1991; 13: 1–4). This damage has been caused by germanium oxide, not the organic form used in cancer patients, in all but one instance. Nevertheless, germanium can be contaminated with germanium dioxide during the process of being produced. No reliable test for its purity exists.

Laetrile (amygdalin)

Found in over 1200 plants, amygdalin—also called vitamin B_{17}—is a nitriloside found in some 1200 plants and in the seeds of non-citrus fruits like apricots and peaches. When broken down by one of the enzymes in the body, cyanide is released. Since cancer cells contain thousands of times more of this enzyme (beta-glucosidase) than normal cells, much more of the toxic cyanide is released and selectively poisons the cancer cells (our bodies have other enzymes which make this substance harmless to ordinary cells). Hence, in theory, amygdalin is the perfect, selective search-and-destroy substance for cancer therapy. Laetrile is the patented product of a group of doctors in San Francisco, who pioneered the use of the sub-

stance.

Studies by internationally respected research scientist Dr Kanematsu Sugiura between 1972 and 1977 found that amygdalin did inhibit lung metastases. Cancer researcher Dr Ralph Moss, then a science writer at Sloan-Kettering, claims the institute covered up positive results with amygdalin (*Cancer Therapy*, Equinox Press, 1995). Another study claimed good results with breast and bone cancer patients with higher doses than had been used before (70 g/day). Leukaemia patients didn't respond (Choice, 1977; 3: 8–9).

Nevertheless, there have been reports of severe or fatal toxicity in children and adults, but mainly in those who ingested high doses intended for injection (Pediatrics, 1986; 78: 269–72) and usually among those self-medicating. Intravenous amygdalin appears to be less toxic. Avoid taking it with high doses of vitamin C, which lowers the ability of normal cells to detoxify the cyanide.

Nutrition and vitamins

By far the most common and accepted of the alternative approaches (and increasingly being embraced by conventional medicine) is the use of nutrition and vitamins.

The Dries Diet

The Dries Diet, originated by Dutch nutritionist Jan Dries, is a mainly fruit diet that uses the bioenergetic properties of certain foods. Dries maintains that all the components of foods can be viewed as condensed light.

This view, while controversial, is not new. Bioenergetic research was started in the 1920s by the Russian scientist Alexander Gurwitsch, whose work was expanded upon by Professor Popp and his colleagues.

Dries's contribution was in recognising the cancer-resistant qualities of some foods, especially wild berries and tropical fruits.

But perhaps the most impressive aspect of his work is the extraordinary success he has had with his many patients. He has treated well over 600 cancer patients who have incorporated his diet with other treatments, with considerable success.

Vitamins

To see if supplementation with specific vitamins and minerals could lower cancer rates, a joint team from the US National Cancer Institute in Maryland and the Cancer Institute, Chinese Academy of Medical Sciences in Beijing, China, gave 30,000 people in Linxian county in China, aged 40 to 69, one of four combinations of nutrients in doses roughly double the US recommended daily allowance. The researchers then followed the study group over five years, to 1991.

This particular county was chosen because it has one of the world's highest rates of oesophageal/gastric cancer. The inhabitants' grain-based diet is known to be low in the nutrients found in fruits and vegetables. The study found a 13 per cent reduction in cancer deaths among the group receiving supplementation with beta-carotene, vitamin E and selenium, a 10 per cent reduction in mortality from all causes, and a 21 per cent reduction in deaths from cancer of the stomach—all striking results for so short a study period. Interestingly, the researchers also found a 38 per cent reduction in mortality from cerebrovascular disease (strokes).

Although the group taking the B vitamins riboflavin and niacin did not have a statistically significant drop in overall mortality, they did show a 14 per cent reduction in throat cancer and a 41 per cent drop in cataracts (J Natl Cancer Inst, Sept 15, 1993). This study was important because it was so carefully designed, and backs up scores of similar, if smaller, studies on humans. But the message it contained is hardly new.

The Chinese study merely adds to the already weighty evidence for vitamins in cancer treatment generated from numerous similar research conducted in many countries over the past decade. Most research, like the Chinese study, has centred on the role of antioxidants in preventing or treating cancer. Antioxidants protect the body from damage caused by harmful molecules called free radicals. Besides for breathing, the body's cells use oxygen to metabolise (and literally 'burn') food for its energy, and to burn away germs and toxins.

As American nutritional specialist Leo Galland puts it: "This process of combustion creates tiny bonfires in the cells, and these fires give off

'sparks' that can start fires in undesirable places, damaging cell membranes and destroying essential fatty acids". These sparks (free radicals) are also created from many other sources (ultraviolet radiation, smoke pollution, heavy metals, rancid fatty acids or overheating of oils, such as in fast-food restaurants). Free radicals wreak havoc by destroying cell membranes, causing genetic damage, depressing immune function, hardening the arteries, disrupting hormone regulation, contributing to diabetes and other systemic disorders and, of course, causing the growth and spread of cancer.

But we're now learning that damage from free radicals can be prevented and even reversed if there are sufficient concentrations in the body of free radical scavengers, called antioxidants—what Galland calls the body's own 'fire brigade' which "snuff these sparks before they start too many fires". These include the antioxidant vitamins A and beta-carotene, B_2 (riboflavin), B_3 (nicotinic acid), C and E, and selenium.

Besides the Chinese study, extensive evidence supports the ability of individual antioxidants to prevent cancer. For instance, in the December 1991 issue of the American Journal of Clinical Nutrition, Dr G. Block of the University of California, Berkeley, concluded that "approximately 90 epidemiologic studies have examined the role of vitamin C or vitamin C-rich foods in cancer prevention, and the vast majority have found statistically significant protective effects".

But even if modern medicine is coming around to the notion that cancer can be prevented by diet and nutrients, it is less willing to use these tools to fight cancer that is already present. Most oncologists aren't aware of (or don't accept) the massive research during the past decade on the treatment of cancer using nutritional supplements. The Bristol Cancer Help Centre—which offers complementary and alternative cancer treatments—has compiled a database of 3000 research studies in this area. This research is not the work of fringe organisations, but of prestigious scientists and laboratories which has been published in mainstream medical journals.

Much of the data concerns work on cells or animals, and some of the work on people is preliminary. Nevertheless, the existence of this copious research is all the more reason to wonder why the medical profession con-

tinues to treat the use of nutritional therapy for cancer as anything other than a feel-good adjunct to the 'real' treatment—radiation, chemotherapy or surgery—when that treatment hasn't made any headway in terms of improving survival statistics since the time of our grandparents (N Engl J Med; 1986; 314: 1226–32).

Vitamin A/beta-carotene

Fat-soluble vitamin A, vital to eye and retina function (whence its name, retinol), protects the mucous membranes of the mouth, nose, throat and lungs from damage and, as an immune-system enhancer, reduces risk of infection and cancer. Researchers suggest that retinol may reduce cancer risk because of its role in maintaining cell integrity and because certain retinoids have been shown to stop the growth of chemically induced tumours in laboratory animals.

These days, most scientists agree that the benefits have more to do with beta-carotene, which the body metabolises into vitamin A, making only what it needs. While you can overdose on fat-soluble vitamin A, found in liver and fish, large doses of water-soluble beta-carotene, found in carrots and broccoli, are non-toxic and constitute an extremely potent source of antioxidants.

Almost every study of nutrition and cancer shows a relationship between low levels of vitamin A and cancer, including the otherwise conservatively interpreted results of the Harvard Nurses' Health study of 90,000 women with breast cancer (N Engl J Med, July 22, 1993).

Work in the laboratory on cell lines and animals has shown that vitamin A/beta-carotene also has a direct toxic effect upon cancer cells. Researchers at Harvard School of Dental Medicine found that beta-carotene or vitamin E quickly altered and slowed proliferation of *in vitro* breast, mouth, lung and skin human tumour cell lines (J Oral Maxillofac Surg; April 1992).

Of the human studies that are available, a number have shown that beta-carotene and vitamin A can help reverse precancerous lesions. The results of one Canadian study of tobacco chewers in Kerala, India, given vitamin A for six months were the complete disappearance of oral precancerous

lesions in slightly more than half, while virtually all experienced a reduction in abnormal cells. Beta-carotene produced similar results. Vitamin A also stopped the formation of new lesions (Am J Clin Nutr, Jan, 1991).

According to American health writer Gary Null (*Healing Your Body Naturally*, Four Walls Eight Windows, 1992), studies done at the Sloan-Kettering Institute in Manhattan have found that a vitamin A derivative caused remission in 80 per cent of subjects with leukaemia—a far greater result than among those receiving chemotherapy as well.

However, several recent studies, including one conducted in Helsinki, Finland (N Engl J Med, April 14, 1994), found that smokers who take beta-carotene increase their risk of developing the disease. The reasons for this are not clear. The answer may lie in the general effect smoking has on nutrients. For example, it is known that smoking greatly increases an individual's vitamin C requirement. Or it may be something peculiar to the study group, many of whom had been smoking for 36 years, and 18 per cent of whom had worked in mines and quarries, or with insulation that contained particles known to cause cancer.

During the five- to eight-year trial period, 876 new cases of lung cancer were reported among the participants, with little difference between the groups. However, there was an 18 per cent higher incidence among the beta-carotene group (N Engl J Med, April 14, 1994).

It may be that beta-carotene supplements suppress other anticancer factors in the body, especially in those with a low nutritional status. A better source of beta-carotene may be from fruit and vegetables.

This theory has been given some weight by American nutritionist Dr Alan Gaby. He looked at two volunteers who took 25 mg of beta-carotene and 25 mg of the carotenoid canthaxanthin.

When the supplements were taken together, the blood concentration of canthaxanthin fell by 38 per cent, suggesting that beta-carotene inhibits canthaxanthin (Townsend Lett Docs, December 1995).

Vitamin C

Perhaps more research has been performed on vitamin C than on any other nutrient, largely due to the interest of twice Nobel Prize laureate

research scientist Linus Pauling.

Thirty years ago, Scottish surgeon Dr Ewan Cameron postulated that any substance which strengthened the intercellular cement binding cells together would probably help to resist invasion by malignant tumour cells. Vitamin C prompts cells to produce higher levels of hyaluronidase inhibitor, which prevents the hyaluronidase produced by cancer cells from breaking down this cement between cells. Vitamin C also helps strengthen the cement itself by helping to synthesise collagen (Ross Pelton and Lee Overholser, *Alternatives in Cancer Therapy*, Fireside, 1994). We also know that vitamin C stimulates natural killer (NK)-cell activity.

In addition to being a potent antioxidant, vitamin C enhances antiviral and antibacterial immune function. Most studies of stomach and oesophageal cancers have shown that the diets of adult patients are low in vitamin C-rich foods (Epidemiology, 1991; 2: 325–57). The Chinese trial showed no evidence of reduced cancer among the group given vitamin C alone; however, it may be that the doses—only twice the US recommended daily allowance—were too low, far lower than the doses recommended by Pauling and others for therapeutic purposes.

A Canadian study, which performed a combined analysis of data from 12 studies of diet and breast cancer, predicted that dietary changes including vitamin C could prevent about a fifth of all breast cancers (J Natl Cancer Inst, April 4, 1990).

At present, we really don't understand how vitamin C works, but some studies suggest that something in its chemistry, rather than its properties as a vitamin, inhibit a variety of cancers—breast, liver and leukaemias. In oestrogen-dependent breast cancer, vitamin C has the ability to lower the concentration of toxic hormonal substances produced by oestrogens.

The Linus Pauling Institute in California found that vitamin C has a similar inhibiting factor on breast cancer tumours implanted in mice (Am J Clin Nutr, Dec 1991), and the University of Texas in Galveston demonstrated vitamin C's ability to decrease oestrogen-induced tumour growth in hamster kidneys by half (Am J Clin Nutr, Dec 1991).

The US National Cancer Institute has been taking a hard look at the effects of vitamin C on the body, particularly its alleged ability to treat can-

cer. Although two controlled clinical trials sponsored by the NCI concluded that the vitamin was ineffective in advanced cases of cancer, the institute found numerous epidemiological studies that were more optimistic. Of 46 studies, 33 showed evidence of statistically significant treatment of cancers of the mouth, oesophagus, stomach, pancreas, breast, anus, colon and cervix.

After teaming up with Pauling, Dr Cameron gave vitamin C to 100 Scottish cancer patients who'd been considered beyond treatment. The vitamin C patients survived four times as long (210 days) as 1000 similar patients not given the vitamin (Proc Natl Acad Sci, 1976; 73: 3685–9). Another study also showed that the vitamin C group lived nearly a year more than those not receiving it and many lived on for years, while all those not receiving the supplement eventually died (Proc Natl Acad Sci, 1978; 75: 4538–42). A later study with lung cancer patients had similar results (J Int Acad Prev Med, 1979; 6: 21–7).

Then, in 1990, Pauling and Canadian biochemist and psychiatrist Dr Abram Hoffer published a study examining the survival of cancer patients following a nutritional programme. The control patients, who did not take vitamins, survived for an average of only 5.7 months. Of those taking daily supplements, which included beta-carotene and 10 g of vitamin C, 80 per cent lived 16 times as long as the controls, and many were still alive at the time the paper was written. The best responders were women with breast, ovarian and fallopian tube cancers (J Orth Med, 1990; 5: 143–54).

Vitamin E

Vitamin E has a particular antioxidant role on cell membranes, at times working in tandem with vitamin C and interacting with vitamin A, the B-complex vitamins and selenium. It prevents toxic interaction with fats and oxygen in cells and so plays a vital role in maintaining the cell's integrity and use of oxygen. As an immune-system enhancer, vitamin E especially protects against lung damage from pollution.

In a Boston animal study, vitamin E prevented oral tumour formation in hamsters by galvanising the immune system to destroy developing tumour cells (J Oral Pathol Med, Feb 1990). The largest controlled human

study in Italy to date has shown that the risk of stomach cancer was more closely linked to low intake of vitamin E than any other nutrient (Int J Cancer, 1990; 45: 896–901), and a national study of over 1000 American patients showed that vitamin E supplements reduced the risk of oral cancer by half (Am J Epidemiol, 1992; 135: 1083–92). As for treatment, of 43 patients at a cancer center in Texas who had precancerous oral lesions treated with vitamin E, nearly half improved and a fifth showed evidence of cell improvement after six months (J Natl Cancer Inst, Jan 6, 1993).

In the Finnish study (N Engl J Med, April 14, 1994) which found increased lung cancer among smokers taking beta-carotene, they also found no reduction in the cancer among those taking vitamin E supplements.

Selenium

Selenium, whose best source is seafood, works in partnership with vitamin E to protect against cancer and to prevent cell membrane damage. This mineral detoxifies heavy metals, protects against environmental and chemical sensitivities, and enhances the body's antibacterial and antiviral defences. A variety of animal and human studies point to its ability to inhibit colon, cervical, breast and liver cancers.

A study in Finland, for instance, found that blood levels of selenium were significantly lower in men who went on to develop stomach cancer (J Natl Cancer Inst, 1990; 82: 864–8). In American Health Foundation research, selenium inhibited colon and breast cancer in rats (Cancer Res, May 1 and Oct 15, 1992), and research at the Nehru University in New Delhi, India, found that administering selenium in drinking water reduced cervical cancer incidence by half in mice (Oncology, 1992; 49: 237–40).

Essential fatty acids (EFAs)

In all the attention focused on antioxidants, the role of EFAs in protecting and treating cancer, and maintaining a healthy immune system tends to be overlooked.

Fats are broadly divided into saturated and polyunsaturated. There are two kinds of EFAs—called 'essential' because the body needs them, but cannot manufacture them itself—omega-6 linoleic acid and gamma-

linolenic acid (present in evening primrose oil), and the omega-3 alpha-linolenic acid family (found in fish and linseed oils). Broadly speaking, these acids are metabolised into hormone-like substances called prostaglandins, which regulate the activity of the white blood cells in the immune system.

We're not sure how EFAs kill tumour cells, but it may involve the ability of fatty acids to bind to protein and so prevent the toxic action of tumour cells (Nutrition, Sept-Oct, 1992).

Perhaps most important of all are those studies that have examined all the antioxidants working in tandem. The Chinese study mentioned earlier (J Natl Cancer Inst, Sept 15, 1993), where only the group with the highest number of antioxidants had an improved cancer survival, suggests that antioxidant nutrients may rely on an interaction with each other to produce the best results.

Although much of the laboratory and clinical evidence is impressive, some of the studies on the treatment of human cancer patients with nutrients have been small or inconclusive. In a companion trial carried out in the same province in China on 3000 people with oesophageal cancer, there was no significant survival difference between the group given 26 vitamins and those given a placebo.

Again, this may be because treatment requires megadoses, and the study group was only receiving two or three times the recommended daily allowance. While epidemiological evidence consistently shows that people who eat lots of fresh fruit and vegetables reduce their risk of cancer by as much as half (Epidemiology, 1991; 2: 325–57), we still have much to learn about the dosages needed to treat people once they have the disease.

Green vegetables

Apart from the nutrients discussed above, there may be other elements in food which can protect against cancer. Researchers from Johns Hopkins University in Baltimore found that broccoli, brussels sprouts, cauliflower, cress and other vegetables of the *Cruciferae* family all contain a chemical called sulphoraphane, which apparently has anticancer properties.

Other alternatives

Homoeopathy

Homoeopaths claim some success with tailoring therapies for individuals to control symptoms or the responses to more aggressive treatments (Br Homoeopath J, 1993; 82: 179–85), or who have leukaemia (Br Homoeopath J, 1986; 75: 96–101). Furthermore, in some experimental trials, it has been shown that, in cancer cells, the ionic balance (which regulates cell differentiation) is disturbed.

Homoeopaths have sought to reestablish the ionic equilibrium by adminstering biochemical salts in small quantities. In laboratory experiments, Kali phos (30 x), Calc phos (30 x) and Ferrum phos (30 x) have all shown antitumour effects. In 20 women with cervical cancer treated with Kali mur, Ferrum phos, Calc phos and Silicea, three achieved a remarkable regression of their cancer and, in seven, a slight regression (Br Homoeopath J, 1983; 72: 99–103). Other studies have shown that the proprietary homoeopathic extract Ukrain (derived from *Chelidonium*) has a marked destructive effect on tumour cell lines in the laboratory (J Chemotherapy, 1996; 8: 144–6).

Herbs

Herbs have a long history—and much scientific evidence—demonstrating their anticancer effects.

One reason the Japanese have the highest tobacco smoking rate, but the lowest lung cancer rate could be green tea. This form of tea contains epigallocatechin gallate, theophylline, tannic acid and other polyphenols, which have been shown to inhibit cancer growth (Jpn J Cancer Res, 1989; 80: 503–5).

In 1975, the Journal of the US National Cancer Institute reported that a number of derivatives of marijuana (*Cannabis sativa*) are clearly shown to retard both the growth of lung cancer and spleen enlargement in mice with leukaemia. Survival time was increased by up to 36 per cent (J Nat Cancer Inst, 1975; 55: 597–602).

Certain parts of sorrel rhubarb (*Rheum palmatum*) and Indian rhubarb

(*Rheum rhaponticum*) contain rhein, catechin and aloe emodin, which have been shown to have antitumour activity (J Nat Cancer Inst, 1952; 13: 139–55).

Investigators at the US University of Virginia, Charlottesville, reported that aloe emodin, which is also present in alder and in buckthorn bark and seeds (*Rhamnus frangula*), showed "significant anti-leukemic activity in mice" (Lloydia, 1976; 39: 223–4).

Burdock root (*Arctium lappa*), present in both the herbal combinations used in Hoxsey's herbs (see below) and in Essiac therapy, has confirmed antitumour properties (Acta Phys Chem, 1964; 10: 91–3).

Echinacea has evidence of indirect cancer-fighting activity because of its long-recognised ability to boost the immune system. A fat-soluable component of *E. angustifolia* and *E. pallida*, (Z)-1,8-pentadecadiene, has been shown in the laboratory to have significant cancer cell-killing ability (J Med Chem, 1972; 15: 619–23).

In 1984, Japanese investigators at Kawasaki Medical School in Hondo Island isolated an antimutation factor in the herb, which turned out to be resistant to protein-digesting enzymes and heat. They termed it the 'burdock factor', which has been shown to render virtually innocuous a wide range of substances known to cause carcinogenic mutation (Mutat Res, 1984; 129: 25–31). One important component of burdock is benzaldehyde, also present in amygdalin (Laetrile), which is found primarily in the kernels of plums, apricots, peaches and bitter almonds.

In 1985, Dr M. Kochi and colleagues treated 65 inoperable cancer patients with benzaldehyde and reported an overall response rate of 55 per cent, with seven patients achieving a complete response, 29 achieving a partial response and, in 24, no further progression of disease (Cancer Treat Rep, 1985; 69: 533–7). These results have been confirmed by another study, which achieved an overall response rate of 58.3 per cent (Br J Cancer, 1990; 62: 436–9). In both studies, the conclusion was that benzaldehyde produced significant anticancer effects without toxicity. A Norwegian trial found that benzaldehyde changed malignant cells back to normal (Anticancer Res, 1991; 11: 1077–81).

The herb *Astragalus oxyphysus* contains the alkaloid swainsonine, which

has been shown to help the spleen stop the spread of cancer to other areas of the body. Animal research conducted at the US Howard University Cancer Center demonstrates that this herb can stop the spread of melanoma (Cancer Res, 1988; 48: 1410–5).

Within a day of being added to the drinking water of mice, it had inactivated more than 80 per cent of tumours in their lungs. This was likely due to enhanced activation of NK-cell function. Swainsonine has also been shown to slow the rate of growth of human melanoma cells (Cancer Res, 1990; 50: 1867–72).

The Journal of the National Cancer Institute has concluded that swainsonine produces anticancer activity on any sort of tumour (J Nat Cancer Inst, 1989; 81: 1024–8).

Iscador therapy

Iscador (Weleda) is the proprietary name of an extract containing European mistletoe, a semiparasitic plant which was favoured as a cancer treatment by Rudolf Steiner in the 1920s. It's often used to shrink a tumour before and after surgery and radiotherapy, although it has been used on its own, by injection, to treat patients with cervical, ovarian, breast, stomach, lung and colon cancer.

Mistletoe contains several chemicals which seem to effectively fight cancer while boosting the immune system, including an enzyme that appears to inhibit the reproduction of cells. But unlike chemotherapy, which kills cells wholesale, good and bad, mistletoe stimulates killer white blood cells which selectively terminate cancer cells alone.

In one trial at the Lucas Clinic Laboratory of Immunology in Arlesheim, Switzerland, a single injection of Iscador given to 20 breast cancer patients was found to produce significant increases in both killer-cell immune responses and cell-inhibiting effects (Oncology, 1986; 43 [Suppl 1]: 51–6).

Of 25 women with primary cancer of the ovary given Iscador after surgery, all the women with stage I and II disease, and a quarter of those with stage III (none in stage IV) were alive after five years. These were compared with similar ovarian cancer patients treated with Cytoval, another cancer treatment. Even though the Iscador patients had a worse

prognosis (20 of the women were in the advanced stages of III and IV), those given mistletoe lived an average of three times longer (16.2 months) than those given Cytoval (Onkologie, 1979; 2: 28–36).

It should be noted that Iscador is potentially toxic, with serious side-effects, when too much is taken. Never attempt to make your own kitchen extract, since both leaves and berries can be poisonous.

Hoxsey's herbs

Harry Hoxsey, an ex-coalminer, used a herbal cancer remedy reportedly handed down through his family since 1840, when his great-grandfather devised the formula after watching a cancer-ridden horse cure itself by grazing on medicinal herbs.

The basic formula, taken internally or externally, uses nine herbs, including liquorice, red clover, cascara, burdock root and stillingia root. A dietary regime, vitamins and immune stimulation are part of the Hoxsey therapy as practised today.

By 1955, Hoxsey's Dallas clinic, with over 12,000 patients, was the world's largest privately owned cancer treatment facility. Hoxsey was frequently arrested for practising without a licence. In 1960, his clinics were banned in the US. He died in 1974. Today, his former chief nurse continues the therapy at the Bio-Medical Center in Tijuana, Mexico.

The American Medical Association labelled Hoxsey a dangerous quack, but refused to investigate either the Hoxsey medicines or their efficacy. Yet, two federal courts upheld the "therapeutic value" of Hoxsey's internal tonic, and a 1953 federal report to Congress confirmed Hoxsey's charges of a "conspiracy" by the AMA, NCI and FDA to "suppress" an impartial assessment of his methods.

The AMA later admitted that Hoxsey's external medication had merit. Barberry root, prickly ash and stillingia have all been shown to have anti-tumour activity, by only in animal tests (Ross Pelton and Lee Overholser, *Alternatives in Cancer Therapy*, Fireside, 1994).

Chinese remedies

In Chinese medicine, the herb *Epimediia glycoside icariine* (ICA) has been

shown to boost the body's defences by increasing NK-cell and lymphokine-activated killer-cell (LAK) activity, and to stimulate the production of TNF in both tumour patients and healthy people (Arzneim-Forsch, 1995; 45: 910–3).

Another herb, *Shosaiko-to* (TJ-9), has been shown in the laboratory to have antitumour effects and to prevent liver cancer in patients with cirrhosis (Cancer, 1995; 76: 743–9). *Ninjin Yoh-eito* extract granules have been demonstrated to improve the quality of life of lung cancer patients after chemotherapy (Ther Res, 1994; 15: 487–500).

Other Chinese herbs with some clinical success are *Actinidia, Baohuoside-1, Mylabris, Liu Wei Di Huang* or *Jin Gui Shen Qi* and *Buzhong Yiqi* (Ralph Moss, *Cancer Therapy*, Equinox Press, 1995).

True stories of survivors

Near to home

Our first case study couldn't be closer to home. It concerns the late 81-year-old mother of **WDDTY** publisher Bryan Hubbard, and the work and methods of Dr Patrick Kingsley, a doctor based in Leicestershire, UK.

The story began on a Sunday in March, 1993, when Bryan's father told him in confidence that his mother was to see the local doctor the following day because lumps had developed on one of her breasts. The following evening his father phoned with the shattering news that the lumps were, indeed, malignant, but they were so advanced that it was too late to perform chemotherapy or any other intervention. The doctor prescribed tamoxifen and morphine as a powerful painkiller.

It appears Bryan's mother had been secretly nursing the lumps for 18 months and had been dressing what had become open ulcerated sores.

So powerful was the morphine that his mother collapsed in the street and again at home. Bryan spoke to the doctor, who believed this was a direct result of the cancer. The doctor tried to prepare the family for death, which he estimated would be within three months.

It was obvious to Bryan that the morphine, and not the cancer, was causing his mother to collapse. He suggested that she come off the morphine and, to her credit, she agreed. The next challenge was greater. Fortunately,

Bryan was well aware of the good work of Dr Kingsley, particularly in treating sufferers with multiple sclerosis. But could he help people with terminal cancer?

So confident was Dr Kingsley that the family were able to convey that assurance back to Bryan's mother who, from the outset, believed implicitly that Dr Kingsley could and would cure her. Nothing would make her waiver from that view, even though Dr Kingsley's treatment must have been far removed from anything she had experienced before.

His first concern was her diet. After a blood test, he immediately put her on a strict exclusion diet that cut out many of the foods and drink—dairy products, wheat and the like—that formed the staple of her daily regimen. The treatment must have seemed equally bizarre. Dr Kingsley believes cancer can be treated with very large dosages of vitamin C and other antioxidants. This is aided by intravenous doses of hydrogen peroxide; oxygen is lethal when introduced directly into the bloodstream, but apparently safe when administered through this method.

The diet is also vital in the treatment. Dr Kingsley maintains that many people have allergic reactions to many everyday foods which can trigger disease and also inhibit the body's natural defences.

For the first month or so, Bryan's mother would make trips to Dr Kingsley's surgery in a small village called Osgathorpe twice a week for her intravenous treatment.

She immediately started to look better, presumably a combination of the drugs and the restriction on the foods that were apparently giving her an allergic reaction. But was she really going to be cured?

This was a question on which Dr Kingsley would never be drawn. The cancer might recede (and so presumably could return if she reverted to her 'poisonous' diet), but a patient is never 'cured', or so it appeared.

Cure or no, Bryan's mother was making great strides. Within three months, her visits were down to one a week, the health visitor was calling just once a week—instead of every day—to dress her wounds, and she was starting to take the vitamins in powder form to complement the intravenous treatments.

The lumps soon disappeared, the sores—save one—completely healed,

and she finished by visiting Dr Kingsley just once every six weeks. The local doctor who had issued the death sentence asked to see her breast. It was a look to treasure, according to Bryan's mother afterwards. To that doctor, it was a recovery of a sort he had never seen before.

Although women are urged to seek help at the first sign of a lump, in Bryan's mother's case, it was lucky she waited so long. Most likely, it was only because medicine considered her a lost cause that she agreed to go along with Dr Kingsley's unconventional treatment.

Edie Hubbard survived six years, all while on Dr Kingsley's treatment. Then her husband became ill and she began refusing treatment because she didn't want to leave him for an entire day while she herself was being treated. When her husband died, she completely lost her own will to live and died six months after him. There is no doubt that she was well so long as she was on the treatment and probably would have continued on it if her husband were still alive.

In a sense, Mrs Hubbard is very rare—one of the few patients who has had nutritional treatment with no orthodox intervention—none of the cutting, burning or poisoning that might have weakened her system further. Equally significant may have been her unswerving belief and trust in her doctor. This has a lot to do with Dr Kingsley's approach—when she first saw him, he refused to be discouraged by cancer or to betray any doubt. His confidence gave her hope, and hope saved her life.

Another essential factor was his steadfast refusal to characterise the likely path of her illness—to make a judgement about how long the illness would linger or how long she would live. Very few doctors have the humility to realise that no scientist, no matter how learned, can predict how a given patient will respond to the challenge of illness and healing, or say with certainty who will live and who will die.

A remarkable response

A patient of George Lewith, a homoeopath, acupuncturist, and expert in nutritional and herbal medicine (who also works at the University of Southampton and in London), visited him in February 1996 after a clear diagnosis of pancreatic cancer, considered one of the most deadly.

He had gone to his GP just before Christmas 1995 with weight loss and tiredness. On examination, he was shown to have a mass, probably a tumour, in his upper abdomen and a provisional diagnosis of cancer was made. Ultrasound scans suggested both liver and peritoneal secondaries, and this was confirmed through an exploratory operation when biopsies were taken and the exact nature of the tumour defined as an adenocarcinoma.

The prognosis for this particular condition is poor. Patients are usually expected to continue to lose weight, and continue to see local tumour growth in association with symptoms such as nausea and abdominal pain. The tumour might also start to obstruct the free flow of faecal material through the bowels.

Because of the levels of secondary growth, surgery was impractical and, after some discussion with his GP and oncologist, the patient decided that he did not wish to undergo treatment with either anticancer drugs or radiotherapy, as these would be very likely to create serious adverse reactions, and the evidence for their effectiveness in this kind of cancer is limited.

He then went to see Lewith to discuss using complementary medical techniques to manage his problem. Lewith adopted a four-pronged attack. The first was to provide advice on diet. The patient was started on a regime high in wholefoods and fresh organic food, and low in animal fats and processed foods. He also started taking high doses of nutritional supplements, specifically, vitamin C, zinc, selenium and vitamin B complex.

At the same time, a number of homoeopathic mixtures were provided, some to be taken orally and some by injection. The oral medications were in the form of homoeopathic complexes targeted largely at the liver and pancreas as well as homoeopathic doses of shark cartilage. The injectable preparation Iscador was also used, the strength of which was progressively increased until a maintenance dose was ascertained, based on the clinical response after three months.

The patient was also placed on high-dose fish-oil supplements.

Much to the surprise of the patient's GP, his clinical oncologist—and his homoeopath—he has continued to improve over the last eight months and

has put on the best part of 14 pounds. It appears, on examination, that his tumour has diminished substantially. After an original diagnosis of three to six months to live, to all intents and purposes, he is now clinically well.

Chapter 5
Prevention

Medicine cannot cure cancer. Even the most successful alternative regimes can be painful and difficult for cancer sufferers to follow. Campaigns aimed at detecting cancer early are thought to be preventative yet, even these, when exposed to close scrutiny, have failed to make any inroads into cancer prevention.

Even predicting cancer incidence among those who are known to be genetically at risk can be difficult. Writing in the medical press, Ian S. Fentiman, professor of surgery at Guy's Hospital in London, provides examples of how poor our powers of prediction can be (BMJ, 1998; 317: 1402–3). He notes one retrospective study which used a standard model of prediction, where the authors looked at the lifetime risk of an 'at-risk' group of developing cancer. The study predicted 76 cases of cancer—only seven cases arose.

He also notes that even among those who are genetically susceptible, as in those women who carry the BRCA1 mutation (located on chromosome 17q21), responsible for nearly half of all cases of familial breast cancer, the lifetime risk is continually being adjusted downwards—most recently from 90 to 56 per cent.

Assessing your true risk

The only cure is prevention and the only person who can prevent your cancer is you. Enhancing your immune system is critical to cancer prevention. This involves careful attention to those elements of your diet, lifestyle and environment which attack or confuse the immune system every day.

It is likely that no one is in a better position to assess your individual cancer risk than yourself. Good information on preventative options and an intimate knowledge of your family history are perhaps the best places to start.

All cancers are not equal and not all dietary risk factors are ones of excess. Although cancers of the colon, rectum, breast and prostate are conditions of dietary excess, cancers of the oesophagus, gastric tract, throat and liver are often associated with dietary deficiencies.

Given this, each individual must weigh carefully his own risk of a particular cancer and construct a programme of prevention which is appropriate to that risk. In their book, *Your Family Tree Connection* (New Canaan, Conn: Keats, 1988), Chris Reading and Ross Meillon suggest constructing a family tree from the perspective of health and disease as one of the most useful ways of assessing your actual risk of a specific kind of cancer. Reading believes in a strong genetic link in diseases of all kinds. Having found the weak or common links in your family, you can then set about constructively boosting and protecting those areas of inherited weakness.

Even if no one in your family has suffered from cancer, a family history of digestive disorders, for instance, or breast problems, depression or anxiety, or a history of autoimmune disease such as arthritis or lupus, may suggest a need to pay careful attention to those factors which sap immune-system power. Reading and Meillon advocate a primarily dietary approach and have found through their studies that food allergy is at the root of many of the illnesses which their patients have suffered. Their book cites several cases of 'miraculous' remission which occurred after taking allergens out of the diet.

You are what you eat

Reading and Meillon are not alone in their dietary approach to cancer prevention. The landmark international report from the American Institute for Cancer Research—Food, Nutrition and the Prevention of Cancer: A Global Perspective (World Cancer Research Fund)—contains some of the most comprehensive information on cancer prevention to date. Published in September 1997, it documents the real potential of nutrition as a preventative for cancer.

The 15 scientists who formed the expert panel that produced the report estimate that between 30 to 40 per cent of cancers are related directly to our diets as well as to related factors such as watching our weight and remain-

ing physically active. Although we still do not fully understand how many cancers develop and, thus, how to prevent them, a major finding of the panel is that we now know more than enough to dramatically reduce the too-high worldwide incidence of cancer. The simplest changes in lifestyle, say the experts, could help reduce the cancer risk for you and your family by 60 to 70 per cent.

The report stresses that the Western diet is much too high in fats and calories, and much too low in fresh fruits, vegetables and high-fibre foods. Fresh fruits and vegetables provide you not only with essential nutrients, but also with a whole arsenal of compounds which boost the immune system and natural protection from some forms of cancer.

Should you eat meat?

It would be simplistic to say that cutting out a single food, such as meat, would dramatically reduce your risk of developing cancer. Because all cancers are different, it may even be that by unilaterally cutting out one food, you alter your risk of one type of cancer in favour of another.

Broadly speaking, it is not necessary to exclude meat from your diet to reduce your cancer risk. However, it is clear that we eat far too much meat, particularly in the West. The much-touted Mediterranean diet incorporates meat as a 'condiment'; this is probably the most level-headed way to approach your meat consumption. A healthy limit is 80 grams (three ounces) of meat daily or 150 grams (five to six ounces) three times a week. It is preferable to choose fish, poultry and meat from non-domesticated animals in place of red meat. If you can afford to, choose organic meat to reduce your risk of ingesting toxins. If organic meat is too expensive, consider buying either Kosher or Halal meats since these are often produced to a higher standard. While organ meats such as liver and kidney contain many useful nutrients, they also concentrate toxins. You should never eat offal unless it comes from organically raised animals.

The question of whether meat causes cancer remains unanswered. While reviews in the US and Australia have shown a positive correlation between meat intake and the development of colorectal cancer (Eur J Cancer Prev, 1991; 2: 13–20), reviews of European populations show no

such association (Eur J Cancer Prev, 1997; 6: 415–7). To confuse the debate further, the UK has the lowest intake of red meat in the European Union, but one of the highest incidences of colorectal cancer. The four European countries with the lowest mortality from colorectal cancer—Greece, Italy, Spain and Portugal—all have a higher intake of red meat. But they also have a much higher intake of protective fruits, vegetables and cereals.

The report 'Food, Nutrition and The Prevention of Cancer: A Global Perspective' concludes that there may be a link between high red-meat consumption and colorectal cancer. However, it is just as likely that increasing your intake of protective dietary factors has as great an influence on health as cutting out the purported 'causal' factors, such as red meat (Nutr Bull, 1998; 23: 79–83).

Emerging information on food preparation sheds further light on the subject. Studies show that it is not meat *per se*, but the way meat is cooked, as well as the overall balance of fruits and vegetables to meat in the diet, which may explain why there are often such confusing outcomes in studies of colorectal cancer (Nutr Res Rev, 1997; 9: 197–239).

A preference for well-done meats can actually raise your risk of developing certain cancers. Most recently, breast cancer has been linked to eating charred meats, such as bacon, hamburger and steak. The overcooking of these meats produces carcinogenic compounds called heterocyclic amines (J Natl Cancer Inst, 1998; 90: 1687–9, 1724–9). In one study, researchers found that, while a preference for red meat did raise a woman's risk of developing cancer, the association was weak. The stronger association was with how much the meat was cooked, with well-done meats producing a 4.62 higher risk of breast cancer compared with those who ate rare or medium-done meat.

A question of fat

Our attitude to fats is another example of using simplistic measures to tackle complex problems. We need fats to live and, while too much saturated fat has been associated with heart disease, some fats are good for us. We also need to consider whether it is fat itself, or the way in which fat reacts with the other things we ingest, that raises our risk of cancer.

Many environmental carcinogens, particularly pesticides and industrial chemicals, are fat-soluble and are likely to accumulate in the fatty tissues of animals in the food chain. So, the more animal, dairy and other fats you eat, the greater your intake of these fat-soluble carcinogens. Some of the apparently protective effects of a low-fat diet may actually reflect a reduced intake of the carcinogens found in animal fats.

Avoiding toxic foods

Food is probably our biggest single source of exposure to a wide range of synthetic chemicals, either as additives or as byproducts of food production, such as pesticides and industrial chemicals. Many of these are carcinogenic.

The flavourings and aromas used in most convenience foods are petroleum-based. Foods which contain colourings, particularly coal-tar dyes, should be avoided. Artificial sweeteners, such as saccharin and possibly aspartame, should also be avoided.

Nitrates—a form of preservative—can be especially dangerous when used in foods which contain amines. Together these compounds form nitrosamines, which are highly carcinogenic. Levels of nitrosamines tend to be high in foods such as bacon and other processed meats.

In the US, some prepackaged products now use a form of petroleum protein called Torutein—a high protein yeast culture grown on 'food-grade' ethanol. Torutein is being used in meat products, baked goods, infant foods, and frozen and other prepared foods. Many governments have held back on approving its use, notably, the UK, Japan and Italy. However, in the US, its use is burgeoning in spite of evidence that it is toxic and may cause cancer as well as reproductive mutagenic effects.

Finally, pesticides and chemical pollution invade almost every thing we ingest. Levels of pesticides in our food are poorly controlled; some would even say that high levels of pesticide use are actively encouraged by the government, food producers, retailers and manufacturers to protect profits. It's estimated that the chemical industry, worldwide, is producing around 45,000 to 50,000 different pesticides based on around 600 active ingredients. Cereal crops such as wheat are doused an estimated five to

eight times during one growing season. Some fruit and vegetable crops are sprayed, on average, 10 to 15 times while growing, and are then given another dose of chemicals to protect them from storage diseases. Add to this the chemicals which farm animals ingest with their feeds, and those which are used on them for medical reasons (such as sheep dip and lice treatments), and you have the recipe for carcinogenic overload.

To give an idea of how pervasive pesticide use is these days, and what the long-term exposure is doing to you, consider the evidence unearthed by The London Food Commission when they conducted a thorough toxicological survey on active ingredients currently permitted for use by UK pesticide manufacturers. Almost 40 per cent of the pesticides currently in use were linked to at least one adverse effect. Out of 426 chemicals listed, 68 were found to be carcinogenic, 61 capable of mutating genes, 35 to have various reproductive effects—ranging from impotence to birth defects—and 93 to cause skin irritations and similar milder complications. The most frequently used and troublesome pesticides and herbicides were the carboxy-acid and phenylurea groups as well as chlorinated solvents.

Numerous studies show a higher incidence of cancers and related disorders in individuals occupationally exposed to pesticides (J Cancer Inst, 1981; 66: 461–4). These include cancers of the lung (J Toxicol Environ Health, 1981; 8: 1027–40), kidney and testicular cancers (Scand J Work Environ Health, 1986; 12: 630–1), leukaemias and multiple types of tumours (Am J Epidemiol, 1971; 94: 307–10), non-Hodgkin's lymphoma (NHL) and malignant lymphomas (Lancet, 1981; *ii*: 579), soft-tissue sarcomas (Br J Cancer, 1979; 39: 711–7) and brain tumours (J Occup Med, 1982; 26: 906–8). Among pesticides, the *N*-nitroso group is considered to be one of the most powerful chemical carcinogens; they've been found to cause cancer in 39 animal species, including primates (Nutr Health, 1983; 2: 1).

Besides occupational exposures, pesticides appear able to cause cancer if you are chronically exposed from babyhood (Natural Resources Defence Council, *Intolerance Risk: Pesticides in Our Children's Food*, Washington, DC: NRDC, 1989).

There is increasing evidence that exposure to organochlorine compounds raises a woman's risk of developing breast cancer. A Danish group

has recently released the findings of a 17-year study which looked at blood samples from 7712 women, originally taken in 1976. The blood samples were analysed and then frozen. During the follow-up, 268 women developed invasive breast cancer. Each woman with breast cancer was matched with two healthy controls. The blood of these breast-cancer patients and controls was again analysed in 1996. The researchers found a significantly increased dose-related risk of breast cancer when organochlorine compounds, particularly dieldren, were present. Organochlorine compounds have a weak oestrogenic effect, and it is this that is suspected of increasing the risk of breast cancer (Lancet, 1998; 352: 1816–20).

There is compelling evidence for eating the freshest, best-quality food you can afford. Eating organic fruits and vegetables will dramatically reduce the total toxic load on your body. If, however, you cannot make this change, just washing your fruits and vegetables before use can considerably reduce your risk of ingesting harmful pesticides. Investing in organic meats will reduce the load further. As an added bonus, organic foods are often chemically different from their conventionally produced cousins. They tend to be stored for shorter periods of time, and they generally appear to contain more of the protective antioxidant nutrients that your body needs to enhance immune-system function.

Protective foods

It's simply not enough to stop eating the wrong foods. While there is some evidence that the long-term use of multivitamin supplements can reduce cancer risk (particularly of the colon) by as much as 75 per cent (Ann Intern Med, 1998; 129: 517–24), eating more fresh, whole foods is likely to be a more complete form of protection. A number of fruits, vegetables and spices have demonstrated anticancer properties, though it is not entirely clear whether this is because of nutritive or non-nutritive factors present in these foods.

The non-nutritive components present in foods are numerous, and include phenols, terpenes, indoles, isothiocyanates and allyl sulphides, among others. These components seem to work by a number of different mechanisms: by inducing or inhibiting specific enzymes; acting as an

antioxidant; scavenging for reactive metabolites; or inducing cancer cell death (Eur J Cancer Prev, 1997; 6: 522–8). Consuming a diet rich in plant foods will provide a milieu of non-nutritive phytochemicals which possess health-protecting benefits (J Am Diet Assoc, 1997; 97 [Suppl 2]: S199–204).

For this reason, some researchers have concluded that including more of the whole food in your diet, rather than taking a single supplement which approximates its nutritional content, affords the best protection (Cancer Lett, 1997; 114: 195–202).

Studies have shown that the protective effects of fruit and vegetables are most marked for epithelial (the cellular covering of the skin and mucous membranes) cancers, particularly of the digestive and respiratory tracts, but somewhat weaker for hormone-related cancers (Eur J Cancer Prev, 1998; 7: 3–8; J Am Diet Assoc, 1996; 96: 1027–39).

Among fruits and vegetables, those which are particularly high in carotenoids and glucosinolates have been consistently shown to reduce the incidence of cancer. Foods which are high in carotenoids include carrots, pumpkin, squash, sweet potatoes, broccoli, peas, apricots, cherries and papaya. While studies into the protective effects of beta-carotene as a nutritional supplement have been somewhat disappointing, a recent study of women who consumed vegetables rich in carotenoids found a 50 per cent reduction in the risk of breast cancer (J Nat Cancer Inst, 1996; 88: 340–8).

Foods which are high in vitamin C may also reduce your risk of cancer, although the evidence seems to be less conclusive. Vitamin C-rich foods provide necessary antioxidants. It is not yet clear whether it is vitamin C, or the flavonoids which are present in vitamin C-rich foods, that is responsible for the potential anticancer effect. It is most likely that the two work synergistically with each other and with other essential nutrients to protect the body.

Studies on Italian populations show that high intake of tomatoes (an important source of vitamin C in that geographical area) is one reason for the protective effect of the Mediterranean diet. And, contrary to most dietary advice, it also appears that cooked tomatoes may be better for you than the raw fruit, since cooking releases desirable antioxidants from the

fruit. Also, the presence of small, but essential, amounts of fat, such as the olive oil used so widely throughout the Mediterranean, help the body to better absorb and utilise the antioxidant lycopene contained in tomatoes (Proc Soc Exp Biol Med, 1998; 218: 140–3). In particular, tomatoes may exert a protective effect against colorectal cancer (Proc Soc Exp Biol Med, 1998; 218: 125–8).

But vegetables belonging to the brassica family (cabbage, broccoli, kale, Brussels sprouts and cauliflower) have shown the most promise in reducing cancer risk. Brassica vegetables are known to produce carcinogen-detoxifying enzymes (Cancer Epidemiol Biomarkers Prev, 1998; 7: 645–6; Chem Biol Interact, 1997; 28: 79–129). A review of the results of 94 studies on the association between brassica consumption and cancer risk produced encouraging results (Cancer Epidemiol Bio Prev, 1996; 5: 733–48).

Among seven of the studies, there was an inverse association between the general consumption of this vegetable and the risk of stomach cancer, between broccoli consumption and the risk of all types of cancer, and between brassica consumption and the development of a second cancer. From the other studies, 67 per cent showed an inverse association between consumption of total brassica vegetables and the risk of a variety of cancers. For cabbage, cauliflower, broccoli and Brussels sprouts, the reduced risks were 70, 67, 56 and 20 per cent, respectively. The association was most consistent for lung, stomach, and colon and rectal cancers, and least consistent for prostatic, endometrial and ovarian cancers.

Dietary ways to reduce cancer risk

Dietary and nutritional advice is one area where both conventional and alternative medicine seem to generally agree. Follow some of these steps to help reduce your cancer risk:

- *Drink hard rather than soft water* (J Orthomol Med, 1989; 4: 59–69), and avoid fluoride and chlorine, which have both been implicated in the development of cancer.
- *Follow a high-fibre, low-fat diet* rich in dark green, leafy and yellow vegetables. Eat meat as a condiment since an overabundance of protein has been linked with cancer (Int J Cancer, 1990; 45: 899–901). Lowering fat

may enhance immune-system function and increase NK (natural killer)-cell activity (Am J Clin Nutr, 1989; 50: 861–7). You should aim for 400–800 grams (15–30 ounces), or more than seven portions daily, of a variety of fruits and vegetables all year round. In addition, eat 600–800 grams (20–30 ounces), or more than seven portions a day, of a variety of cereals, pulses, roots, tubers and plantains. Fresh and minimally processed food is best.

- *Increase fibre.* While there is little evidence to show that a high-fibre diet will substantially reduce your risk of colorectal cancer (Epidemiology, 1994; 5: 66–79), it is unlikely to be harmful, either. Dietary fibre is necessary to maintain the overall health of the bowel and should therefore be a part of every well-balanced diet. Wholegrains also have a number of other beneficial properties, including trace minerals, resistant starches and other indigestible compounds which help move food through the gut, and phenolic compounds and phytoestrogens with potential hormonal effects (Nutr Cancer, 1997; 27: 14–21). The water-soluble fibres found in fruits and vegetables are also important and can be gentler on the gut—important for those suffering from constipation or irritable bowel syndrome (IBS).
- *Limit salt, fats and particularly alcohol* in your daily diet.
- *Don't spare the spices.* Garlic has a long history of cancer prevention and as an immune-system booster. Cumin and black pepper have been shown to reduce the risk of colon cancer (J Ethnopharmacol, 1998; 62: 15–24).
- *Store your food properly*. Use refrigeration and other appropriate methods to preserve perishable foods, and never eat foods which may contain mycotoxins—the result of prolonged storage at ambient room temperature.
- *Don't fry foods, and do limit hydrogenated fats and foods that are smoked, salt-cured or pickled*. In some parts of the world, especially China, Japan and Iceland, where heavy consumption of salt-cured (including salt-pickled) or smoked foods is common, there is a concurrently higher incidence of cancers at some sites, especially the oesophagus and stomach.

- *Phytonutrients can help men and women*. Some studies suggest that traditionally prepared soya products—rich in isoflavones—can help protect against benign prostatic hypertrophy (prostate enlargement) and prostate cancer (Prostate, 1993; 22: 335–45; Lancet, 1993; 342: 1209–10). However, the evidence in support of phytoestrogens as a cancer-preventative is far from conclusive.
- *Be smart about supplements*. Don't megadose except under the guidance of a qualified nutritionist. Too much calcium (BMJ, 1989; 298: 1468–9) and iron (N Engl J Med, 1988; 319: 1047–52) can be carcinogenic. However, at appropriate levels, they are protective. Selenium, zinc, magnesium and iodine all fight cancer. Selenium, in particular, has been shown to reduce total cancer mortality, and the incidence of lung, colorectal and prostate cancer, when taken in doses of 200 mcg daily (Med Klin, 1997; 92 [Suppl 3]: 42–5).

  A good-quality supplement should include at least a gram of vitamin C per day (up to 10 g in extreme cases) as well as the full B complex and antioxidants beta-carotene (a precursor of vitamin A) and vitamin E. Long-term use of multivitamins can reduce the risk of colon cancer by as much as 75 per cent. This finding comes from an analysis of food questionnaires given to 88,756 women in the Nurses' Health Study. Although short-term use did not alter colon cancer risk, women who had taken vitamins for more than 15 years had significantly lower risk. Researchers speculate that the folate contained in multivitamin preparations may exert a protective effect (Ann Intern Med, 1998; 129: 517–24).
- *In addition to eating well, being physically fit reduces your risk of many diseases*, and cancer is no exception (Med Sci Sports Exerc, 1996; 28: 97–104; JAMA, 1984; 252: 514–7; Cancer Causes Control, 1994; 5: 136–40). Regular aerobic exercise performed for at least 20–30 minutes three to five times a week will lower levels of circulating testosterone (Eur J Appl Physiol, 1978; 39: 283–91). Exercise as part of a weight-loss programme may be even more effective since obesity is a known risk factor for enlarged prostate (Int Urol Nephrol, 1996; 28: 55–9).

Is there a cancer personality?

Our understanding of what is known as the 'bodymind'—the way body and mind influence each other for good or ill—is still in its infancy. Yet, many observers believe that there may be a particular personality type which is more prone to cancer. There are others who wonder whether cancer may appear at particular sites in the body for psychological reasons.

The most well-researched psychological link with cancer is stress. According to Dr Claus Bahne Bahnson, a professor of psychiatry at Jefferson Medical College in Philadelphia, "The relationship between stress and cancer has intrigued scientists for more than 2000 years. Certain persons do appear to be at a greater risk for developing cancer because of personality make-up dominated by sadness, depression and unmet emotional needs" (Psychosomatics, 1980; 21: 975–80).

Bahnson has studied the question of psychology and cancer extensively, and has uncovered two major theories about personality type and cancer. According to one of them, loss and depression are potential precursors. According to the other: "A particular personality configuration, characterised by denial and repression as well as by strong internalised control and commitment to social norms, increases the risk of cancer development".

He cites two researchers, Schmale and Spence, who found that they could predict which women were at higher risk of cervical cancer, based on a recent history of loss or deep feelings of depression and hopelessness. Bahnson also cites other researchers who have come to similar conclusions. In one retrospective study, Leshan and Worthingtom studied cancer patients against controls with a personal history test and found that cancer patients had: suffered the loss of an important relationship before the diagnosis; no ability to express hostile feelings; and exhibited tension over the death of a parent, even if the death had occurred many years before.

Finally, Bahnson elaborated on these findings by producing a further constellation of characteristics which are found frequently among cancer patients. These included: childhood loss, trauma and / or deprivation; pessimism and self-blame; a kind of predictable self-destructiveness which is triggered by similar sorts of events or anniversaries; and the development

of a double life, where a large gap exists between the face presented to the world and the real self.

Other researchers have reached similar conclusions. Bahnson cites two prospective studies: one involving 2500 Swedish women, which found that depression often preceded the diagnosis of cancer; the other including more than 2000 Western Electric employees, which found that a history of depression predated the development of cancer.

Looking for predictors of cancer, Thomas and colleagues studied medical students and found that cancer patients were often the most deprived in childhood, particularly with regard to maternal attention (Johns Hopkins Med J, 1974; 134: 251–70). It must be said that not all studies have found this correlation (JAMA, 1989; 262: 1231) but, even so, the results of studies overall have been remarkably consistent.

Doctors now accept that personality type often plays a significant role in the recovery from cancer. It seems likely that it also has a role to play in its development.

Don't be a cancer 'type'

The optimal way to protect yourself psychologically will vary from person to person. All individuals are unique. There is a range of psychological therapies available and you should choose one which seems to suit you best. At the same time, whatever course you choose should challenge and enhance your psychobiological healing potential.

- *Investigate stress reduction techniques.* Acute stress has been known to enhance tumour growth in animal studies, and it is likely to have the same effect on humans. Stress also weakens the immune system. Take time to review the major stressors in your life and eliminate as many as you can. Stress reduction can take the form of formal courses of therapy, but can equally involve taking up a hobby. Relaxation techniques such as transcendental meditation and yoga, or simple meditation, are all helpful.
- *Cultivate a supportive social network.* Loneliness can increase feelings of depression. Try joining groups of like-minded people, and try to develop affiliations with those who are in some way 'in tune' with who you are.

- *Get out of the rut.* People who feel that their lives are already mapped out for them often experience deep feelings of hopelessness. If there is something you have always wanted to do, maybe now is the time to try it. The healthiest people are those who incorporate variety into their lives, and have a vigorous sense of who they are and what they would like to achieve in their lives. Some find psychotherapy a useful adjunct to discovering who they are.

Environment

Environmental factors are increasingly coming under scrutiny as potential carcinogens. Among these, electromagnetic fields (EMF), and air and water pollution have received the greatest attention.

Much of the research into EMFs has concentrated on the potentially harmful influence of magnetic fields. Scientists have found it hard to countenance the idea that electricity could also be a culprit and are unable to explain the mechanism by which it could cause disease. Because electric fields can be blocked, the human body considerably reduces the penetration of electric fields into itself. Magnetic fields, on the other hand, can readily penetrate the body, which is why research has focused on magnetic, and not electric, fields.

In 1979, a paper was published showing the link between electrical wiring configurations in the home and the incidence of childhood cancer (Am J Epidemiol, 1979; 109: 273–84). Since that time, numerous epidemiological studies have been published, showing with varying consistency a link between electricity and cancer. The biological connection between electricity and cancer remains elusive, maybe even controversial. Nevertheless, the epidemiological studies present worrying possibilities.

In particular, scientists have found that airborne particles, including water, dust and toxic chemicals, concentrate close to electric fields. One study in Norway showed that they tend to concentrate under power lines (*Meteorological Report Series, University of Bergen, Report No 101994*, ISBN 82-90569-61-0). The belief is that airborne products are attracted to sources of power. It is the electric, not magnetic, field which may be responsible for this phenomenon.

Researchers are now asking whether other airborne toxins, such as bacteria, might also be concentrated around electric fields.

The parts of the body which may be most affected by these concentrated toxins are the lungs and the skin, although less well-defined illnesses are also a possibility. The link between childhood cancer and EMFs has already been well established (Lancet, 1990; 335: 1008–12; Lancet, 1990; 335: 1336–7). Less publicised are those studies linking the development of lung cancer with power lines. One review of five major studies showed a statistically significant excess of lung cancer in relation to EMF exposure (Am J Epidemiol, 1996; 143: 841). One of these studies was carried out in East Anglia, where the relative risk for lung cancer in women living under high voltage power lines was 1.75 (Br J Cancer, 1986; 53: 271–9). Increased lung exposure to concentrated carcinogens is one possible explanation for these findings.

The adult leukaemia risk is also raised. In the first major study of electric fields and cancer risk, which involved electrical utility workers at a Canadian power company, the research team looked at the exposure to both magnetic and electric fields. When cumulative exposure to magnetic fields alone was considered, the ratio of cancer incidence in the electrical utility workers compared with the rest of the population was non-significant at 1.6. But when electrical fields were included, it shot up to a 11.2 relative risk of developing leukaemia—some of the highest leukaemia risks ever found. The study also showed that there was a dose-related risk: the higher the cumulative exposure to electric fields, the higher the risk of leukaemia (Am J Epidemiol, 1996; 144: 150–60).

It is also possible that increased incidence of skin cancer may be related to EMF exposure. The results of a small study from Bristol University showed a statistically significant increase in skin cancer in persons living within 20 metres of a power line. The preliminary results of the study were reported at a review meeting of the US Department of Energy Contractors in San Antonio, Texas (November 17–21, 1996).

Given this data, you should do all you can to protect yourself and your family against EMFs. There are several steps you can take:

♦ *Measure EMFs in your home, especially the bedroom*. The bedroom is prob-

ably the most important room in the house since you will spend around a third of your time there. You can have EMF levels independently monitored or you can test them yourself by hiring or buying a magnetometer. The pressure group Powerwatch can assist with monitoring, and advise you on the use, purchase or loan of instruments (Orchard House, High Common, Beccles, Suffolk NR34 8HW).

- *Alternatively, get your local power company to come and test for EMFs for you*. The drawback to this is that they will only test during the daytime and this may not give an accurate reading of night-time exposure which, due to the use of cheap electricity in the surrounding area, can increase by as much as threefold (EMN & VDU News, 1992; 3 [3–4]: 6–11).
- *Rearrange your furniture.* Avoid locating beds or chairs near significant domestic sources of EMFs, such as electricity metres or TVs. Magnetic fields can penetrate almost anything and are very difficult to shield against, but electric fields may be shielded by walls and trees, for example. Allow at least six to eight feet from such sources, especially for beds. Bedside radio alarms, whether electric or battery-powered, should be at least two feet from your head. Don't use an electric blanket and, if you do, switch it off before retiring. Don't plug in appliances near your bed. Remember that electrical fields can be generated by appliances even when they are switched off.
- *Take antioxidants*. EMFs create more free radicals in the body (EMN & VDU News, 1992; 3 [5–6]: 6–8), and free radicals have a proven role in the development of cancer. Increasing your intake of vitamins A, C and E may help. You can do this with supplements, although megadosing with these vitamins is not advised without the guidance of a qualified nutritionist. In the first instance, try increasing your intake of leafy, green vegetables and fresh fruits.

EMFs from computers and mobile phones are on the increase. Take these steps to protect yourself:

- *Consider whether you really need a mobile phone* or whether you have simply been convinced you do by clever and persistent marketing. If you do use one, try using a hands-free kit or buy one of the new products on

the market that help divert harmful rays. A new device called the Techno AO appears, on initial research, to help the body protect itself against various frequencies by boosting brain-wave frequencies to combat them. More information and evidence is available from the distributors (Marketex UK Ltd, Hill Cottage, Barham, Kent CT4 6QD).

- *Consider purchasing a low radiation monitor* or, better yet, a total system which emits negligible or very low levels of radiation, as antiradiation screens for computers are not usually very efficient and do not protect your vulnerable head. LED (light-emitting diode) screens, mainly used with portables, emit hardly any radiation, and have made considerable advances in recent years in clarity and legibility. Prices are coming down all the time, so consider a switch.
- *At the office, position your seat away from the backs and sides of other people's monitors*—this is where the highest radiation occurs.

The air you breathe

It is arguably hardest to avoid carcinogens present in the air and water supply—after all, humans must breathe and drink water to survive. While it may be impossible to avoid breathing in car fumes, there are forms of air pollution which you can avoid.

Smoking is a major form of indoor pollution that poses risks for the smoker as well as those in the immediate vicinity. In one multicentre European trial, 509 women and 141 men who had never smoked, but developed lung cancer, were compared with a control group of 1542 non-smokers without lung cancer. Participants were asked about their exposure to cigarette smoke during childhood, as adults, at home, in the workplace, in vehicles and in public places. Results showed a small, but measurable, relationship between exposure and cancer risk.

Researchers at the International Agency for Research on Cancer (IARC) found that the risk increased with greater exposure, especially in the workplace. However, they failed to find an association between childhood exposure to passive smoking in the home and lung cancer later on (J Natl Cancer Inst, 1998; 90: 1440–50).

Other studies have shown a similar link between inhaling other people's

smoke and developing cancer, especially in children.

The only conclusion is if you smoke, stop. If you don't smoke, don't be afraid to be assertive around those who do. Equally, don't be afraid to propose tighter regulations about smoking in your workplace and at restaurants and leisure facilities. Smokers are risking your health along with their own.

What's in the water?

The quality of the water we drink from the tap is often pretty poor. Filtration processes don't always remove nitrates and other chemical poisons. Worse than that, the government insists on putting one of the biggest poisons of all—fluoride—directly into our water system. In the UK, only about 10 per cent of homes receive fluoridated water but, in the US, as many as 50 per cent have this chemical pumped into their homes daily. Fluoride has been associated with brittle bones, mottled teeth, genetic disorders and cancer.

Fluoride lingers in the body. In healthy adults, only about half of what is ingested is excreted by the body. Children, diabetics or those with kidney problems may retain up to two-thirds of the fluoride they take in. Human studies are thin on the ground, but animal studies have shown definite evidence of fluoride's cancer-causing effect. An American study sponsored by the government's National Toxicology Programme (Lancet, February 3, 1992) found evidence of bone-related cancer, liver / bile cancer, oral lesions, abnormal cell changes and metaplasias (replacement of one tissue type with another).

Reducing your fluoride load

Have your fluoride levels tested if you are at all worried. The group Good Healthkeeping in Lincolnshire (tel: 01507-601 655) charge £15 for an initial test and £8.50 for a follow-up.

- *If you live in a fluoridated area, your only option is to use solely bottled water or to fit a reverse-osmosis water purifier in your home* (again available from Good Healthkeeping; it costs around £230 plus the cost of renewing the filter membrane every six months).

- *Reduce your intake of tea and soft drinks*, since these are also rich sources of fluoride. Drink herbal tea made with non-fluoridated water instead.
- *Switch to non-fluoride toothpaste*.
- *Refer to the nutritional advice at the beginning of this chapter*, since a poor diet will only increase your susceptibility to the symptoms of fluoride poisoning. Adequate levels of magnesium, zinc and iron will help your body counter the effects of fluoride. Also, watch your consumption of prepackaged foods, especially frozen vegetables.

Your toxic home

Your home should be a haven where you can rest and where your body can repair itself. Unfortunately, many of our homes only further add to the risk of serious illnesses such as cancer. The cleansers we use in our kitchens and bathrooms—the very ones which promise to makes our homes healthier by, for instance, removing "harmful bacteria"—the pesticides we use on our lawns, the fumes we inhale while cooking or heating the home, volatile chemicals emitted from carpets and plastics, and the EMFs emitted from all our household appliances can actually put our health at risk.

Indoor air pollution has become a considerable risk in recent decades. One survey of 600 homes in six cities, carried out by Lance Wallace, an environmental expert working for the American Environmental Protection Agency (EPA), showed that peak concentrations of 20 toxic or carcinogenic chemicals were up to 50 times higher indoors than outdoors (Los Angeles Times, December 26, 1989).

Many of the chemicals used in household products are highly volatile, which means they easily evaporate and can be inhaled. Others that are sprayed from aerosol cans or hand pumps release a shower of microscopic, easily inhaled particles. Aerosol spray paints and paint strippers may contain the propellant methylene chloride, which has been shown to be carcinogenic to the breast and other organs in rodents.

Many common household products emit chemicals without our ever knowing it. Chief among these is formaldehyde.

Because of the extensive use of building materials and furnishings which

release it, formaldehyde exposure is almost inescapable in modern indoor environments. The greatest levels are given off by the glue which holds together fibreboard, particleboard and plywood panelling.

The brightly coloured plastics which are now used for everything—from storage to cleaning and kitchen implements, from wastepaper bins to the casings on our electrical equipment—emit formaldehyde. So do new carpets, no-iron clothes, upholstery, foam insulation, latex paint, space heaters, new paper and cosmetics (including nail polish, skin creams and hair sprays).

Although formaldehyde emission decreases with time, high humidity or moisture can increase its release from glued particleboard and panelling. Chronic exposure to formaldehyde has been shown to be carcinogenic (J Dent Res, 1998; 77: 1896–903; Acta Otolaryngol Suppl [Stockh], 1998; 535: 1–16), although the association is limited to cancers of the nose and mouth.

More worrying is the indoor exposure to those chemicals which we associate with the outdoors, such as common garden pesticides.

Surprisingly, the air inside your home is more likely to be contaminated with these pesticides than the air outside. In America, the Environmental Protection Agency's 1990 report Non-Occupational Pesticide Exposure Study (EPA/699/3-90/003 January 1990) identified at least five pesticides at levels up to 10 times greater indoors than outdoors.

For instance, the No-Pest strips which we hang from our walls and light fixtures contain the insecticide dichlorvos (DDVP). DDVP has been extensively investigated by the EPA. The agency estimates that domestic exposure to DDVP from these strips poses a cancer risk ten times greater than for pest-control workers who regularly apply this pesticide (J Pesticide Reform, Spring, 1988: 29). Nevertheless, these products remain on sale for household use.

Believe it or not, you are also highly likely to be exposed to harmful chemicals while doing the things you most associate with washing them away—showering, washing dishes and flushing the toilet. Many carcinogenic industrial solvents and contaminants, such as benzene and methylene chloride, easily pass through the skin into the body during showers, baths and dish washing (Am J Publ Health, 1984; 74: 479–84). More importantly, such carcinogens become gases at room temperature and are then

easily inhaled (Toxicol Applied Pharmacol, 1989; 99: 534–43). According to at least two studies, the amount of industrial volatile chemicals inhaled during a 15-minute shower with contaminated water is equivalent to drinking about eight glasses of contaminated water (Am J Publ Health, 1984; 74: 479; Environ Health Perspect, 1985; 62: 313–8). The longer and hotter the shower, the more chemicals build up in the air; levels are four times greater after a 10-minute shower than a five-minute shower. Baths also produce this effect, but at a much lower level.

Reducing the risks at home

The list of potential toxins in modern homes is endless but, unlike the outside environment, you can control how potentially toxic your home is. Reducing toxic emissions in your home doesn't have to be a full-time job (though it may seem like it at first). Doing what you can, when you can, will help to reduce the total toxic load and will go a long way towards improving your and your family's health. Try some of the following:

- *Don't use enamelled cookware*—a major source of cadmium. Cadmium is a well-known carcinogen. Other common sources are cigarette smoke, and excessive tea and coffee drinking. Excess cadmium can be drained using a combination of amino acids and homoeopathy. Boosting your zinc intake will also help combat the effects of cadmium toxicity.
- *Avoid using all aerosols, no matter what propellant they use*. Although fluorocarbons are being phased out as propellants and a number of aerosol cans now claim to be CFC-free or environmentally friendly, every time you use an aerosol, you will inhale high concentrations of its chemical contents, whatever that happens to be.
- *Keep showers short and, if you can bear it, use only cool or slightly warm water*. If you feel you must have a hot shower, shut the bathroom door to prevent chemicals dispersing throughout the house and open the window. Finish off with a cool rinse. Before you flush the toilet, put the lid down to avoid dispersing chemicals (and germs) into the air.
- *Pesticides should be used sparingly*—if at all—and only use enough of the product to get the job done. Read the labels. Avoid chemicals such as chlordane (banned by the EPA for professional use in 1980, but still pre-

sent in many household products), and heptachlor, commonly used in garden insecticides, and for moth- and termite-proofing. Better yet, try using some of the organic pesticides now on the market.

- *Remove your shoes upon entering your home.* In homes where people do not routinely remove their shoes, the house dust is loaded with lead and pesticides which get tracked in from outdoors. Carpeting holds up to 100 times the amount of dust as bare flooring; the deeper the pile, the harder it is to remove the dust. Toxic chemicals can remain in carpets for years.
- *Read the label on your cleaning products*. Avoid anything which contains tetrachloride, trichloroethylene, perchloroethylene or benzene, all of which are carcinogenic. Benzene is also found in paint and varnish removers, some adhesives and cements.
- *Don't put your children in flame-retardant sleepwear*. More common in the US, fabrics treated with TRIS can be dangerous in other ways as the chemical can be absorbed through the skin even after repeated laundering. Instead, use naturally fire-retardant materials such as silk and cotton.
- *Avoid the toxic beauty trap*. There are several things you can watch out for and eliminate from your toiletry cabinet. Any product with bright colours (striped toothpastes, coloured mouthwashes, shampoos, deodorants) should be regarded with suspicion since many of them contain carcinogenic, artificial coal-tar dyes. The colour of the product does not add to its effectiveness.
- *Among the biggest cosmetic offenders are hair dyes.* The use of permanent and semipermanent hair dyes have been associated with non-Hodgkin's lymphoma, multiple myeloma, leukaemia and Hodgkin's disease. There is also a possible association with breast cancer. Women who use black / brown / brunette and red hair dyes have higher risks than women who use lighter colours. Check the label for phenylenediamine-based ingredients in permanent and semipermanent hair dyes. In temporary rinses, chemicals like Acid Orange 87, Solvent Brown 44, Acid Blue 168 and Acid Violet 73 are also carcinogenic. For a complete list of carcinogenic cosmetics and other household items, see *The Safe Shopper's Bible* by David Steinman and Samuel S. Epstein (Maryland: Macmillan, 1995).

Chapter 6
Advice

What do you do if you've got cancer?

- *If you plan to seek solutions through conventional medicine, find the most experienced surgeon* who will treat you as an equal partner in any treatment decisions.
- *Insist on the most conservative surgery possible*; if aged over 60 with breast cancer, explore the possibility of taking a drug like tamoxifen alone.
- *If you do take tamoxifen, make sure to have periodic tests on your eyes, liver and womb* (endometrium), and take any drug or radiation therapies for the shortest possible time. Remember, if you haven't gone through menopause yet, no studies have proved that tamoxifen will work for you.
- *Don't hesitate to take the best from conventional and alternative therapies and use them together*. Contact an organisation like the Bristol Cancer Help Centre or People Against Cancer, which offer a variety of approaches to cancer (see p 161 for details).

  The Bristol Cancer Help Centre employs a holistic approach, encompassing diet, exercise, meditation, relaxation, visualisation and even psychology—to help you change the lifestyle that has made you ill.
- *Read books by Bernie Siegel and Louise Hay*. Dr Siegel is a surgeon who nevertheless believes (as do an increasing number of immunologists) that your mind can help your body to heal. He encourages his patients to use complementary therapies, such as visualisation and diet, regardless of whether they use chemotherapy and surgery. Louise Hay beat cancer with this body / mind approach.
- *Don't be a 'good' patient*. Many studies have demonstrated that patients who speak up for their rights and refuse to accept gloomy prognoses live longer than those who unthinkingly follow doctors' orders. Above all, don't accept a death sentence.

A recipe for nutritional cancer treatment

If you have cancer and would like to use a nutritional approach either instead of or in tandem with conventional approaches:

- *Don't embark on this form of treatment unless you firmly believe that it will work for you*. Any form of treatment—conventional or alternative—works best in people who believe in it.
- *Find a practitioner who is highly experienced and successful in using dietary manipulation* and supplements in cancer treatment, either alone or in combination with other approaches. Find out the survival rate of his patients.
- *Stop smoking, and drinking alcohol and caffeine*.
- *Eat food and drink water which is as pure and chemically unadulterated as possible*. Eat whole foods, especially wholegrains, pulses, vegetables and fruits, and white meat only (fish, chicken, turkey).
- *Use the highest quality unprocessed cold-pressed oils*, such as extra virgin olive oil for frying, and safflower and sunflower oils for salads. Avoid margarine; use a little butter if you must.
- *Take high doses of nutritional supplements* as prescribed for your individual requirements.

Guidelines for treating or preventing cancer

- *Take vitamin A 10,000 IU, beta-carotene 25,000 IU, vitamin B complex 50–100 mg, vitamin C 3–10 g, vitamin E 600–800 mcg, selenium 100–200 mcg, essential fatty acids* (omega-3) as one to two fish oil or linseed capsules, or one table-spoon of linseed oil per day.
- *The patients who most successfully fight cancer combine a dietary and supplement programme with the use of cancer-fighting substances*—rather than simply seeking out a 'magic bullet' which is going to kill their cancer.

In one study of patients with pancreatic cancer, which usually has a survival time of about four months, those receiving a mix of treatments—vitamins A and E, enzyme therapy, hyperthermia, tamoxifen, mistletoe, thymus extract and other substances to boost the immune system—trebled the usual survival rate and reported an improved quality of life, with a gain of appetite and weight, and pain relief (Erfahrungsheilkunde, 1996; 45: 64–72).

- *Follow a high-fibre, low-fat, low-protein diet rich in dark-green leafy and yellow vegetables* (Int J Cancer, 1990; 45: 899–901). Lowering fat may enhance the function of your immune system and increase NK-cell activity which can help reduce the spread of the disease (Am J Clin Nutr, 1989; 50: 861–7).
- *Don't fry foods, and do limit eggs as well as hydrogenated fats and smoked, salt-cured or pickled foods, sugar and too much salt*. Vegetarian diets appear to be protective, as do soy products. The Kelley dietary programme, which includes 10 types of individually tailored diets, has also shown some evidence of success (**WDDTY**, vol 7 no 3).
- *Some therapists recommend thymus extract to boost the immune system*. Omega-3 and -6 fatty acids have been shown to kill cancer cells. As for minerals, too much calcium has been related to cancer (BMJ, 1989; 298: 1468–9) as have high levels of iron (N Engl J Med, 1988; 319: 1047–52) although, at appropriate levels, both are protective. Selenium, magnesium, iodine and zinc all fight cancer. Germanium, another mineral, appears to enhance the production of our body's own interferon (Tohoku J Exp Med, 1985; 146: 97–104).
- *Drink hard water, rather than soft* (J Orthomol Med, 1989; 4: 59–69) and avoid chlorine and fluoride, both of which have been implicated in cancer.
- *Consider a number of substances which act as cancer inhibitors*, even if on their own they don't actually cure. These can help in conjunction with more potent anticancer agents and therapies, including the following.

Alkalinise your diet

Recent research shows that the modern diet, high in animal protein, raises the net acid load in the body whereas fruits and vegetables add the alkaline bicarbonate ion to the blood, thus lowering the blood acid level. A typically high alkaline diet, according to People Against Cancer, would be 70 per cent vegetables, 10 per cent fruit, 10 per cent meat and 10 per cent grains.

Consider also investing in a water ioniser (alkaline water maker). For more information, contact Ion and Light Company (tel: 001 415 346 1682; website: ionandlight.com) or The Watershed (tel: 001 517 886 0440; website: www. watershed.net).

Use home heat treatment

Heating the body to 40º C (104º F) combined with taking ginseng, for example, to increase the effect of heat can be useful in cancer treatment and prevention. Raise your own body temperature moderately by using whole body wet wraps, saunas and hot baths. Of these, the hot bath is probably the easiest, and using a cup of Epsom salts and a cup of baking soda mixed into the water will have a gentle detoxifying effect on the body.

Taking the bioflavonoid quercetin at doses of 1000–1500 mg three times daily can aid hyperthermia in two ways: it helps to make the cell less resistant to heat treatment, and it lowers the pH inside the cancer cell, making it less likely that the tumour will grow or spread (see Boik J, *Cancer and Natural Medicine: A Textbook of Basic Science and Clinical Research*, Princeton, MN: Oregon Medical Press, 1995, page 55).

Melatonin

Melatonin can amplify the antitumour effect of a variety of substances. In one study of patients with spreading tumours untreatable by conventional means, nearly half the patients given melatonin and interleukin-2—which helps the immune system fight cancer—were alive a year later, compared with only eight out of 48 of those given support alone (Supp Care Cancer, May 1995). Similar results have been achieved in patients with brain tumours given melatonin alone (Cancer, 1994; 73: 699–701) as well as in those with cancer of the stomach (Tumori, December 31, 1993) and lung (Oncology, 1992; 49: 336–9).

Bovine cartilage

The research on bovine cartilage appears superior to that on shark cartilage (which also provides excessive amounts of calcium). In one study of 31 terminal cancer patients, 35 per cent showed a complete response with probable or possible cures (J Biol Resp Mod, 1985; 4: 583).

Mind–body therapies

Engage in deep relaxation, meditation, visualisation, regular exercise and support groups.

Natural ways to treat prostate cancer

In the US, the National Academy of Sciences estimates that 40 per cent of men's cancers, especially prostate cancer, are affected by nutrition.

- *A low-fat, high-fibre, high-complex carbohydrate diet and avoiding alcohol helps to reduce the risk* of prostate cancer.
- *Fat intake, more often than any other dietary factor, has repeatedly been found to be related to the risk of cancer*, and some studies suggest that the amount of saturated fat in your diet may be particularly important. A study which included five ethnic groups—Japanese, Caucasian, Chinese, Filipino and Hawaiian—showed that reducing fat intake reduced the risk of prostate cancer (Am J Nutr, 1991; 53: 31; Am J Nutr, 1991; 54: 1093–100).
- *Increase your fibre intake*. A study of Seventh-Day Adventist men—who eat a lot of beans, lentils, peas and some dried fruits—showed that the more fibre a person consumes (especially lignin and the water-insoluble fibres, such as cellulose), the greater was the binding of oestrogen and testosterone, thus reducing the amount of these hormones in the body and possibly reducing the risk of prostate cancer (Cancer, 1989; 64: 589–604; Am J Clin Nutr, 1990; 51: 365–70).
- *Avoid oestrogen in processed food*. A review in the Journal of Endocrinology (1993; 136: 357–60) suggests that exposure at birth to oestrogenic chemicals in foods such as cows' milk may be related to the decline in sperm count and doubling of the rate of testicular cancer among men in Western countries.
- *Eat zinc-rich foods and consider zinc supplements*. A healthy prostate contains higher levels of zinc than any other organ because it's required for producing male hormones. Zinc protects us from the toxic effects of the metal cadmium, which has been shown to stimulate the growth of the prostate in low concentrations. High-level exposure to cadmium is associated with an increased risk of prostate and lung cancer (Am J Epidemiol, 1989; 129: 112–24). Compared with other groups, men with the most malignant form of prostate cancer have the highest cadmium levels and the lowest zinc levels. Pilot studies have shown that zinc supplements can successfully

reduce an enlarged prostate and treat the associated symptoms. It's therefore suggested that a daily 15-mg dose form part of of your diet, no matter what other treatment plan you're on.

- *Make sure you have enough EFAs, particularly the omega-6 variety found in evening primrose oil*. Linoleic acid has been shown to reduce the risk of cancer cells forming within the prostate (Nutr Cancer, 1987; 9: 123–28).
- *Consider taking botanical extracts of pollen and saw palmetto*. Both have been shown in studies to reduce symptoms of benign prostate enlargement and shrink prostate size.

Two holistic approaches

Dr Patrick Kingsley

The mainstay of Dr Patrick Kingsley's (see page 126) treatment is a combination of high-dose, intravenous vitamin C and intravenous oxygen therapy using hydrogen peroxide.

Dr Kingsley advises patients to avoid junk food, refined carbohydrates, tea, coffee, milk and dairy products, some grains—particularly wheat—and yeasts.

Instead, patients should consume soya products and fresh fruits and vegetables, particularly the cruciferous variety (broccoli, cauliflower), which have proven antioxidant effects. Changes to diet should be introduced slowly to minimise stress.

It is also advisable to take at least 10 g of powdered vitamin C per day (with magnesium ascorbate, to minimise gut intolerance), a good antioxidant mixture, and 7–10 g of the herb *Echinacea* per day (to stimulate the immune system).

He also believes that coffee enemas are useful because they stimulate the liver and large intestine into excreting toxic elements from the body.

Dr Kingsley cites anecdotal evidence of his success. Recently, at a local cancer self-help group, of 36 of his patients, 24, or two-thirds, said that they were rid of the cancer or continually improving. Four patients had reached a plateau, two were deteriorating and six were not improving. Dr Kingsley says that such percentages are fairly typical.

Nicholas Gonzalez

Nicholas Gonzalez is a New York immunologist who follows many of orthodontist William Kelley's theories in treating advanced cancer patients—principally, that it is the pancreas, rather than the immune system, that is critical in cancer control (see p 96).

He advises patients to adopt an individualised, fresh organic diet (one of 10, ranging from vegetarian to high in meat, depending on your cancer and constitution).

His patients are put on high-dose supplements and pancreatic enzymes, which are believed to attack and liquify tumours. They are given digestive aids and concentrates of raw beef organs and glands. They also undergo detoxification, particularly with coffee enemas.

An extensive study of 50 patients with terminal or extremely poor prognoses treated by Kelley shows apparently impressive results. All are alive 10 years after the study. Of five patients with pancreatic cancer, four are still alive (the fifth died of Alzheimer's disease) after 10 years. Their survival with conventional treatment would be three to five months.

The sun

With controversy surrounding the use of sunscreens, there are alternative ways of avoiding burning that should be used in combination with careful, controlled exposure.

Vitamin A supplements and their close cousins, the carotenoids, may reduce the likelihood of burning. Carotenoids protect plants from ultraviolet damage. In humans, carotenoids are supposed to reflect light rays and convert light energy to chemical energy, just as they do in plants.

They also reduce the damaging activity of free radicals, counteract the immunosuppressive effects of ultraviolet radiation and 'scatter' some of the ultraviolet light. Ultraviolet exposure depletes skin beta-carotene levels, making the skin more prone to photodamage.

In one German study (Eur J Dermatol, 1996: 200–5), women were given a daily dose of 30 mg of beta-carotene for two months before exposure to the sun. After two weeks of controlled exposure, they showed an increase over controls in Langerhans cells, an important component of the skin's

immune system, which are markedly diminished by solar radiation. **WDDTY** columnist Harald Gaier routinely advises everyone over nine years old to take a daily supplement of 7500 IU of vitamin A, starting on the night before the first exposure, until their skin is used to the sun.

Vitamin E and other antioxidants (selenium, vitamin C) are useful for warding off the damaging effects of ultraviolet light.

Recommended reading

Hulda Regehr Clark *The Cure for All Cancers* (ProMotion Publishing, 1993)

Vernon Coleman *Power over Cancer* (European Medical Journal, 1996)

Gerald B. Dermer *The Immortal Cell: Why Cancer Research Fails* (Avery, 1994)

Jan Dries *The Dries Cancer Diet* (Element Books, 1997)

Richard Evans *Making the Right Choice: Treatment Options in Cancer Surgery* (Avery, 1995) (Avery Publishing: Garden City Park, NY)

Sandra Goodman *Nutrition and Cancer: State of the Art* (Green Library Publications, 1995) (Green Library: 9 Rickett Street, London SW6 1RU)

Liz Hodgkinson and Jane Metcalfe *The Bristol Experience* (Vermilion, 1995)

Aveline Kushi *The Macrobiotic Cancer Prevention Cookbook* (Avery 1988)

Michael Lerner *Choices in Healing: Integrating the Best of Conventional and Complementary Approaches to Cancer* (MIT Press, 1994)

Ralph W. Moss *Questioning Chemotherapy* (Equinox Press, 1995) (Equinox Press: 144 St John's Place, Brooklyn, NY 11217)

Ralph W. Moss *Cancer Therapy. The Independent Consumer's Guide to Non-Toxic Treatment and Prevention* (Equinox Press, 1995)

Ralph W. Moss *The Cancer Industry* (Equinox Press, 1996)

Richard A. Passwater *Cancer Prevention and Nutritional Therapies* (Keats Publishing, 1978)

Ross Pelton and Lee Overholser *Alternatives in Cancer Therapy: The Complete Guide to Non-Traditional Treatments* (Fireside, 1994)

Useful contacts

Bristol Cancer Help Centre
Grove House
Cornwallis Grove, Clifton
Bristol B58 4PG
Tel: 0117 980 9505

New Approaches To Cancer
c/o St Peters Hospital
Guildford Road
Chertsey, Surrey KT16 0PZ
Tel: 01932 879 882 or Freephone 0800 389 2662

People Against Cancer UK
PO Box 56
Twickenham, Middlesex TW2 7UA
Tel/fax: 020 8286 6978
E-mail: info@PeopleAgainstCancer.com

People Against Cancer Worldwide

604 East Street
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Fax: (515) 972 4415
E-mail: info@PeopleAgainstCancer.com
Will provide tailormade advice on the best alternative cancer regime for you

Ralph Moss

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Website: www.em-hazard-therapy.com
Helpline (premium rate £1.50/min): 0906 401 023

Oxygen therapy in the UK

Aside from hyperbaric oxygen therapy, only a handful of doctors in the UK offer treatment with ozone or H_2O_2

Dr Patrick Kingsley (Osgathorpe, Leics; tel: 01530 223 622), has used H_2O_2 for three years, mainly for cancer, myalgic encephalomyelitis (ME), multiple sclerosis and candidiasis. A member of the International Oxidative Medicine Association, he visits the US regularly to attend conferences and keep up-to-date with the latest research.

Dr Simi Khanna, a private practitioner (High Wycombe, Bucks; tel: 01494 472 110) has used these therapies for 10 years and finds them beneficial for viral infections and ME in particular.

Dr Fritz Schellander (Tunbridge Wells, Kent; tel: 01892 543 535) has used oxygen therapies for eight years and finds them particularly useful for postviral illnesses and as an adjunct to cancer therapy.

In London, **holistic therapist Mark Lester** offers ozone treatment at the Finchley Clinic (tel: 020 8349 4730). He favours the use of a hot-steam cabinet, which introduces ozone via the skin while the patient sits in the cabinet. As an alternative for those who don't like injections, transdermal ozone cleanses and detoxifies the lymphatic system, in which 90 per cent of body fluids are stored. Mr Lester finds it particularly beneficial for ME.

Dr Julian Kenyon will soon be offering ozone therapy in clinics in London and Winchester (tel: 020 7486 5588).

A word of caution: both ozone and H_2O_2 are toxic in their purified states (ozone may damage the lungs if inhaled). They are safe and effective only when diluted to therapeutic levels and administered by an experienced practitioner, who should be consulted before starting any course of treatment.

The book ***The Use of Ozone in Medicine*** **by Drs S. Rilling and R. Viebahn** (Heidelberg: Haug Publishers, 1987, 1994) is an excellent guide for practitioners.