MEDICAL PRACTICE

*Contemporary Themes***Poverty, wealth, and health, or getting the dosage right***

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"Shortly before the second World War, when visiting Whipsnade Zoo, I was given a brochure full of facts and figures. From it I learnt that the big elephant which gives rides to children was then earning at the rate of £600 pa. This fact struck me with peculiar force because £600 pa happened to be the exact salary I was myself receiving as Director of Studies for the University of London Tutorial Classes Committee. . . . I found myself wondering what other occupations stood on the same rung of the ladder as the elephant and myself, which would be above and which below, and why."

With these words Barbara Wootton opens her remarkable book *The Social Foundations of Wages Policy*.¹ In this she shows that wages, salaries, and incomes are not determined by immutable economic laws but by a combination of history and custom and power and public acceptability. It follows from this that poverty and wealth are not conditions ordained by nature but are produced by human action; in practice we are continually varying incomes, though in doing so we make use of relatively imprecise guidelines.

My interest in wages, salaries, and incomes springs primarily from an interest in preventive medicine and epidemiology. In these disciplines we may well find objective measurements which are more likely to help the politicians and civil servants who control our affairs than theoretical measurements drawn from conventional economics. Money is a social enzyme, an excellent medicine but not a cure-all. Properly used it can make men work and encourage them to perform miracles. Channelled in the right directions and in the right amounts it can cure unemployment, irrigate deserts, clear slums, create new towns and cities, universities, and hospitals. But experience in Britain has recently shown that overdosage produces iatrogenic disorder and alarming side effects.

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My primary concern here is with the relation between individual income and health. Within this broad framework secondary factors are no less important. Poverty below a certain level is an absolute barrier to health. But above this level ignorance, habit, prejudice, greed, laziness, and envy may so distort personal and family budgeting and behaviour that new health hazards are produced.

Effects of sudden affluence

A graphic example of the dangers of sudden affluence is provided by the experience of Dr W A Paddon.²

For the past 30 years Dr Paddon has been in charge of the Grenfell Mission Hospital at North West River—the only major hospital centre on the coast of Labrador. He was born at North West River, where his father was a doctor before him, so his experience of health and ill-health in Eskimos and North American Indians extends over 50 years. During this time the 1939-45 war brought the Americans to Labrador, with the result that the cash incomes of the indigenous inhabitants rose spectacularly. Then in 1948 Newfoundland and Labrador joined Canada and the generous Canadian welfare payments came into operation.

Before the war the Eskimos lived a hard and meagre life. The major source of all their possessions was hunting, using harpoons, fish spears, and other hand-made weapons. The women were beautiful seamstresses, making polar-bear trousers and sealskin boots with walrus-ivory needles. Hunting was hazardous and unreliable, so all its fruits were shared by each community. Diet consisted of seal, walrus, bear, narwhal, and hare and, in summer, birds and their eggs, salmon, and scurvy grass. The beasts and fish were all eaten raw, including their livers, brains, kidneys, guts and gut contents. Thus a high protein, fat, and vitamin diet in relatively small quantities was combined with rigorous exercise. Provided they could avoid infant and maternal death; white men's infections, especially measles and tuberculosis; accidents; and botulism, due to eating the luxury of decayed seal meat, the Eskimos were of good physique and extremely fit.

Until 1950 there was no dental caries at all. Whole families had not a single cavity. Teeth were often broken or worn down, but that was all. Then came money and cheap sweets in plenty. Sweet consumption soared. The children were given sweets almost from birth—until they started on cigarettes at the age of 5. Total extraction of decayed stumps at the age of 4 became the rule, and total extraction of the permanent teeth followed at or before puberty. (Here one must not be too critical. It is still not unknown in North Wales for young people to be given a total extraction and full upper and lower dentures as a 21st birthday present.)

Until the war Eskimos rolled their own cigarettes with relatively little tobacco and chewed Hudson's Bay plug or smoked it in their old clay pipes. The Americans brought cheap machine-made cigarettes and smoking went up by leaps and bounds among the men. Women did not start smoking until 1955, but since then their health pattern has followed that of the men. An Eskimo is ready to spend up to 60% of his income on cigarettes.

Within 10 years of their starting heavy smoking three new diseases made their appearance—myocardial disease, especially coronary artery disease; peptic ulcer; and chronic irritative bronchitis with productive cough. Previously a 70-year-old Eskimo could run with a dog team. Now none of them can. (It is only fair to add that dog-teams have now been replaced by skidoos.) By 1965 the women were showing as much coronary disease as the men. Excessive smoking has not been going on long enough among the Eskimos to produce carcinoma of lung and other organs.

Only slightly less damaging has been the excessive consumption of alcohol by both Indians and Eskimos. Three patterns of drinking have emerged. Some old people drink heavily after the "cultural shock" of affluence. The continuously drunk older is not a great problem to society; he is unemployable, affable, and puerile. An increasing number of men in their 30s, however, are now nearing "the end of the road." They have drunk 12-36 340-g (12-oz) bottles of beer a day (equivalent to 2.1-3.4 litres (2-6 pints) of whisky a day) for up to seven years. They come into hospital with convulsions, after an injury or an acute illness, and show signs of cerebral oedema, which may prove fatal. The third pattern is shown by the Eskimo who goes on an occasional "blind." Normally he is a good family man, traditionally respectful of the rights of others, but when drunk he will brutally assault his wife and may kill her. It has been suggested that this violence may be associated with the large amount of killing which is a part of the normal Eskimo way of life.

For this picture it is impossible to apportion blame, and it must be remembered that with these health evils have come health benefits. Maternal and child mortality have declined, infections have been controlled, and accidents properly treated. On balance the Eskimos will, in the long term, be the gainers. There is no reason why Eskimos should be denied the purchasing power or the pattern of life of their fellow Canadians. Would it have been possible through health education to have prevented these experiments in affluence? I doubt it. But I hope that, as a result of the awful lesson before their eyes, the next generation of Eskimos may find a reasonable middle course for themselves.

Adjustment to the abolition of poverty seems to take time, and it is probably best for our health if the change is not too quick. But there is no excuse either for its being too slow. As in most human affairs correct timing is vital for success.

Abolition of poverty in Britain

In Britain we were fortunate that the major steps in the abolition of poverty were taken at the time of rationing and positive food policy during the war. Thus the risks of overindulgence following increasing income did not arise. Indeed, it was not until five years after the war that a free pattern of personal expenditure was possible.

Before the war the pattern of poverty and its effect on health were plain to see. Yet most people did not see them because they were tucked away in a vast statistical volume—the *Registrar General's Decennial Supplement*, in which all causes of death over a 10-year period were analysed by, among other things, social class.

TABLE I—*Infant mortality rate over 100 years. Figures are numbers of deaths in first year per 1000 live births*

Year:	1871-5	1881-5	1901-5	1921-5	1936-40	1941	1942	1952	1962	1972
England and Wales	153	139	138	76	55	59	49	28	22	17
Scotland	127	118	120	92	76	82	69	35	27	19

INFANT MORTALITY

Of the many useful health indices—for example, the standardised mortality ratio and the expectation of life at birth or at the age of 1—the best general index is still, despite some theoretical objections, the infant mortality rate. It is an expression of many factors—genetics, nutrition, health habits, sewage, water supply and hygiene, and the quality and availability of health services. From my point of view its multifactorial nature is an advantage, since individual and national poverty are equally multifactorial in their effects.

Table I shows in a nutshell progress in health of England, Wales, and Scotland over the last 100 years. This table provides the firmest

of answers to our chronic pessimists. I first put such a table together in 1943,³ when the infant mortality rate for England and Wales was 49 per 1000 live births. We believed a figure of 29 could be achieved because New Zealand had achieved this in 1942 for its non-Maori population. We got there in 10 years; and in the next 20 years another 10 deaths were knocked off the figure. Clearly, as the infant mortality rate gets smaller the scope for improvement gets smaller also.

SOCIAL CLASS

How important is the abolition of poverty in this remarkable achievement? The answer emerges from table II. Recent social class analyses for England and Wales are unfortunately not available, so the figures for Scotland for the past 30 years are given. Up to 1953 the English figures show a precisely similar trend. The pattern is absolutely consistent. In 1942 class V, the unskilled manual labouring group, had an infant mortality rate not far short of 100 deaths per 1000 live births. Thirty years later the figure was down to 28 deaths—a better figure than that for class I in 1942. Meanwhile class I, the upper professional and managerial group, achieved the staggeringly low infant mortality rate of 10 per 1000 live births. The key factors in infantile mortality are maternal and infant nutrition (including the mother's nutrition during her own childhood), child hygiene, and skilled medical and nursing care during the antenatal, obstetric, and postnatal periods. Most important of these are maternal and infant nutrition, and here the real disposable family income, and how it is spent over two generations, is what matters.

TABLE II—*Infant mortality rate for Scotland over 30 years analysed according to social class*

Class:	I	II	III	IV	V	Rate for all classes
1942	34	41	65	67	94	69
1952	18	25	35	39	46	35
1962	14	18	25	30	38	27
1972	10	13	18	20	28	19

NATIONAL COMPARISONS

The same proposition may be shown again by national comparisons (table III).⁴ Figures for the developing countries have been omitted because their registration methods are inevitably unreliable and often rudimentary. In South America infant mortality rates around 100 per 1000 live births are common, in Egypt the figure is around 110, and in India estimates by states range from 60 to 180, depending on the degree of famine.

TABLE III—*Infant mortality rate for 1972 in selected countries*

	Death rate per 1000 live births		Death rate per 1000 live births
Sweden	11	Canada	18
Holland	11	East Germany	18
Finland	11	United States	18
Japan	12	Eire	20
Norway	13	Czechoslovakia	22
Denmark	14	West Germany	23
Switzerland	14	USSR	24
New Zealand	16	Greece	27
France	16	Italy	28
Australia	17	Poland	28
United Kingdom:	18	Hungary	33
England and Wales	17	Rumania	42
Scotland	19	Yugoslavia	43
Northern Ireland	21	Portugal	50

From table III it can be seen that the countries tend to fall into three groups. The smaller northern democracies, with rates between 10 and 14 per 1000 live births, are approaching the United Kingdom figure for social class I. The presence in this group of Japan, with its large population, is a testimony to the economic and social efficiency of its people. The medium-sized democracies have rates of 16-23 per 1000 live births. Britain is still near the top of this group, but recent progress in other members of the group has brought them all much closer together. In the last two years France has overtaken Britain.

The third group, with rates between 24 and 44 per 1000 live births, includes most of the communist bloc and the Mediterranean countries. These figures in this group represent rapid progress from much less favourable levels.

World Health Organisation estimates for expectation of life at birth confirm the association between health and per capita gross national product. For the quarter of the world's population in the "developed regions," the overall life expectation in 1965-9 was 70 years. For the three-quarters of the world's population in the "developing regions" the expectation was 50 years. Thirty years earlier the life expectation for the "developing regions" was 32 years, probably much the same as at the height of the Roman Empire. Since 1935-9 these regions have come nearly half the way along the road to the developed world.

POVERTY

It is not unfair to claim that in Britain we have very nearly beaten poverty and the diseases of poverty. As table 1 shows, the battle has been in progress for at least a 100 years, and thanks to Beveridge, Rowntree, Booth, and many others the immediate causes of poverty are now well known. In essence poverty is an imbalance between prices and the available family budget. The available family budget depends on several factors, of which the most important are the levels of: wages; wives' earnings; rents or mortgage payments; and social benefits for children, unemployment, chronic sickness and disability, and retirement and old age.

Unemployment has many evil effects, but if social benefits are adequate it need not of itself cause poverty, though it does, of course, reduce the available gross national product. In the battle against poverty Keynesian economics have played their part mainly by permitting an increase in wages and social benefits, the latter particularly in times of slump. So too with inflation. Inflation per se need not cause poverty. It only does so if wages and social benefits fail to keep up with prices. To maintain the balance between prices, on the one hand, and wages, salaries, and the social benefits, on the other, is now as much a problem of public health as of political economies.

Before turning to the question of affluence, it must be categorically stated that from the point of view of health the abolition of poverty is an extremely good thing. Though it brings with it certain new risks and dangers these are relatively small, and they can all be defeated without too much difficulty.

Effects of affluence on health

In considering affluence as a cause of disease much can be learnt from Howe's excellent works^{6,7} on British medical geography. The map in fig 1 shows the distribution of affluence. The extremes in this map are no longer very great, and the apparent poverty of northern Scotland and rural Wales is offset by low rents. The real contrast

FIG 1—Distribution of affluence 1964-5 as indicated by total net incomes.

is between the massive populations of, on the one hand, industrial Scotland and the north of England and, on the other, the prosperous south east and south Midlands. A comparison of this map with that in fig 2, which shows infant mortality, indicates that the areas of relatively high infant mortality coincide with those of relative poverty.

The distribution of cancer of the lung and bronchus has a very different pattern. Here the wealthy industrial areas of the south east are as heavily afflicted as Glasgow, Liverpool, and Manchester.

FIG 2—Infant mortality 1959-63. The distorted shape of this map and that in fig 3 is to relate area to population as directly as possible. Squares are urban areas and diamonds rural areas, and their sizes are proportional to size of population at risk.

CORONARY HEART DISEASE

What could we expect from a map showing the distribution of coronary heart disease? If it is a disease of higher executives, the office-bound, and the company-car-borne it should be most prevalent in the south east. If it is a disease of cigarette smokers its prevalence should follow the pattern for lung cancer. Surprisingly, however, the distribution of coronary heart disease (fig 3) is similar to that for infant mortality and relative poverty.

In areas with a high rate of coronary disease the consumption of carbohydrates—cakes, biscuits, and sugar—is high. In areas with lower rates of coronary disease the consumption of meat, fresh vegetables and fruit, and butter is high^{6,7}. In other words areas with a high rate of coronary disease show the dietary picture of the "pattern of emergence from poverty."

Brummer⁸ has shown that in many countries there is a high correlation between coronary mortality and carbohydrate consumption. In Finland the coronary mortality rate in the relatively poor eastern part of the country is nearly twice that in the more prosperous west.⁸

Given also the experience of the Eskimos it seems that coronary

thrombosis is not simply a disease of either poverty or affluence but rather of overindulgence, especially among those who have recently become relatively affluent. It is indeed multifactorial. Smoking is one important factor in the equation, but so too is over-eating. Carbohydrates are as bad as fat, for the body neatly converts excess and unused carbohydrates into fat. My old physiology teacher, Dr John Mellanby, used to say, "The secret of getting rich at farming is this: feed pigs on carbohydrates at 1d per lb, and sell the fat at 1/- per lb."

This is not to deny that a diet rich in animal fat may be an important contributory factor in coronary thrombosis. Nor is it to deny that coronary thrombosis is a common cause of death in social class I. But overeating of carbohydrates seems to be even more dangerous; this is not surprising in view of the relative prices of carbohydrate and fat and the body's capacity for turning carbohydrate into fat.

Yet another factor in coronary aetiology seems to be lack of exercise, though I am inclined to regard this as marginal. The work of Morris and Chave⁹ on this subject is especially relevant.

FIG 3—Deaths from ischaemic heart disease in men 1959-63. Areas of highest mortality are those of most recent emergence from poverty.

OVERINDULGENCE AND HEALTH EDUCATION

The general picture is this. As poor people get less poor many of them naturally tend to indulge themselves in the minor luxuries with which they are familiar—smoking and the consumption of sweets, cakes, jam, and sugar. The "eating all day" syndrome will be familiar to all who travel regularly on the railways. In one or two generations the pattern changes, with new forms of pleasure and luxury and perhaps new forms of indulgence.

As every social worker knows excessive smoking in the newly affluent may sometimes pull the family back into near poverty. Such self-indulgence is not the norm, but rather part of the picture of the "problem" family. The same applies to excessive debts and hire-purchase commitments.

There are obvious risks in generalising from the physically and

socially sick. Once again I must emphasise that the benefits of the new affluence to the poor far outweigh its dangers. Affluence is without doubt a good thing. It is greed and self-indulgence, regardless of social class, that are bad for health.

Routine surveys of the health of higher executives, by Schilling and myself in London and Harlow¹⁰ and Pell and D'Alonzo among Du Pont staff in America,¹¹ show that executives are more rather than less healthy compared with the community as a whole. In the "rat race" to the top basic good health plays a major part. Nowadays in social class I both smoking and overeating are becoming increasingly rare.

The health education factors at work seem to be different for each sex. In men it is plain fear, as they see friends and colleagues who smoke or overeat dying prematurely. In women women's magazines and radio have played a major part in weight control and reduction. Every possible psychological ploy has been used—social acceptability, beauty, available range of clothing, getting and holding your man—as well as descriptions of the major health risks that result from excessive weight—hypertension, diabetes, cardiac failure, cholecystitis and gall stones, and rheumatic damage to the hips and spine. The dangers to the unborn child of maternal smoking, as well as the ordinary hazards to the lungs, heart, gut, etc, are constantly pointed out.

Thus there is good reason to hope that the improving health habits in relation to smoking and overeating of social class I will spread down the scale.

Affluence and alcohol

Alcohol consumption is excessive if it exceeds 150 ml of absolute alcohol a day, and excessive consumption carries a high risk of cirrhosis of the liver. Table IV shows how important price is in restraining consumption.¹² Emergence from poverty is signalled by an increase in beer alcoholism, just as steps up the income ladder bring in wines and then spirits. Alcohol plays a major part in traffic accidents, and blood alcohol determinations by the police are having a healthy effect on excessive social drinking. As with obesity, drunkenness is decreasingly socially acceptable, but heavy social drinking is still a major phenomenon of affluence.

TABLE IV—Alcohol consumption, price, and deaths from cirrhosis 1966-7

	Individual consumption of absolute alcohol (l/year)	Index of price in relation to disposable personal income	Deaths from cirrhosis of liver (per 100 000)
France	25	1.6	52
Portugal	18	2.3	48
West Germany	14	2.6	29
Australia	11	2.9	8
Canada	9	2.9	12
United Kingdom	8	5.7	4
Holland	6	2.8	6
Finland	4	11.7	5

Poverty, wealth, and psychiatric illness

Successful people suffer from psychiatric illness just like everyone else. Their psychosis rates are, however, relatively lower. The picture of the successful businessman always consulting his psychiatrist may be true in some parts of the urban United States, but it is not true of Britain.¹⁰ The high suicide rate in the relatively affluent areas is not among the affluent but among the lonely, the isolated, and the socially rejected.

There are, however, psychiatric illnesses in which the cash nexus is important. Before the 1939-45 war I observed the "means test" neurosis in able-bodied unemployed men whose social benefits were abolished because of the earnings of their grown-up children living at home. Again, compensation neurosis is familiar to all who deal with industrial injuries. If it pays a man well enough to be sick there is a psychological type who will continue to be sick indefinitely. Schizophrenia and poverty are marginally related, but schizophrenia may be a cause rather than a result of poverty. Suicide rates and crime rates tend to go down when "times are hard," but here the picture becomes very complicated.

I have not tried to compute happiness or unhappiness, which is quite a different thing from psychiatric illness. One can easily invent anxieties that ought to follow affluence. But it is just as easy to acquire excessive hire purchase commitments on £30 a week as it is on £130

a week. Imprudent budgeting is no respecter of social class, and material expectations seem to increase with each new realisation. Once a certain level of poverty has been passed I know of no certain evidence that happiness varies either directly or inversely with wealth.

Emotions engendered by affluence

There is no doubt that affluence, especially the affluence of others, is highly emotive. Christian teaching has long suggested that poverty is inherently virtuous and wealth and money inherently evil, and theoretical equalitarianism has long been a bastion of Fabian socialism and Shavian teaching. Indeed, in *The Intelligent Woman's Guide to Socialism*¹² George Bernard Shaw equated socialism with equal pay for all. Wage and salary structures and equalising systems of taxation in Europe and North America testify to the success of these teachings over the last 70 years.

It is easy enough for thoughtful people to feel guilt even at their own moderate earnings and to accept that there is "social guilt" to be assumed on behalf of the really high earners, but these guilt feelings are mistaken. Affluence as such is no more a sin than happiness or health. It is poverty, greed, and self-indulgence for which we should reserve our condemnation.

The other emotion which affluence engenders is envy. It may be argued that both guilt and envy may be beneficial—guilt by exposing evil and envy by promoting effort. But envy is easily exploited. It is easy to attribute one's own failings to the success of others. As a unifying factor in large work groups envy has an understandable attraction. But envy tends to leave out of account the importance of a reasonable span of earnings to reward those who, by training, effort, and personality, perform exceptional services or carry exceptional responsibility.

DIFFERENTIALS

Just as the past 40 years have witnessed the abolition of poverty and the diseases of poverty, so too have they witnessed a great reduction in the legitimate causes of envy. Table V shows how in 36 years wages and salaries in the public and semi-public sectors have increased twelvefold at the lower levels and only threefold at the upper levels. A ratio of 1:35 has been cut to 1:10, and this is before the equalising application of income tax.

In Scandinavia twelvefold increases have been general, but there the ratio 36 years ago was 1:7, and it is still 1:7.¹⁴

A ratio of 1:7 may be about right to equate social justice and reward for extra skill, effort, and responsibility. If this is so the wages of our lowest paid workers and our social benefit rates still have some way to go in relation to the top levels.

TABLE V—Span of incomes between rich and poor before tax in 1938 and 1974

	Salaries		Increase over 36 years
	1938 (£)	1974 (£)	
Municipal street cleaner	145	1800	12-fold
Elementary school teacher (average length of service)	300	2400	8-fold
University professor (average length of service)	1100	6600	6-fold
Top municipal officer	3500	14 000	4-fold
Top civil servant	3000	17 350	6-fold
Judge of Supreme Court	5000	17 850	3½-fold
Member of cabinet	5000	16 000	3-fold

Conclusions

I have tried to show that poverty is a major health hazard, and that the relief of poverty is closely associated with general health benefits. But the onset of affluence brings with it a new set of dangers. Affluence itself need not be detrimental to individual health. But the misuse of affluence, which is particularly common in those who are new to it, may easily prove fatal. These very real dangers come from indulgence or overindulgence in tobacco, food, and alcohol, in that order, with lack of exercise also important but relatively low in the batting order. Today greed is more important than sloth in the public health picture.

It follows that preventive medicine has a new and difficult duty thrust upon it. In a world where it is easy to gratify power-

ful and dangerous desires we have to discover ways of training ourselves and others in habits of moderation, or, if that is impossible, abstinence. Clinical experience suggests that knowledge and fear are powerful prophylactic agents. In health education person-to-person communication is generally more valuable than any other method of teaching.³

If affluence linked with abstinence is physically harmless to the individual excessive affluence may be damaging to society as a whole. When a household income of £20-£40 a week is failing to meet the price of familiar necessities increases for those earning over £200 a week are an invitation to the lower earners to use their new-found power to gain equality of treatment. It is unrealistic to claim that taxation takes care of the injustice. All wage negotiations are done in terms of gross pay, and at the higher levels it is gross pay which determines pensions. Moreover, the higher the pay the greater the part which the individual himself plays in salary determination. At very high levels, apart from linked pension and fringe benefits, salary becomes a status symbol only. In reality it may be a symbol of stupidity rather than success in its recipient, since its effect on those he employs will be explosive.

Inflation is a social disease which may soon have medical implications. Anti-inflationary measures must start at the top, apply to pretax incomes, and be permanent.* A maximum span in pretax incomes of 1:7 to allow for extra skill, effort, danger, discomfort, hours of work, and responsibility is the most society can afford if inflation is to be controlled and disruption to be avoided. Such a limit causes little sacrifice and has many real advantages. Equality of reward at the top reduces monetary bias in career selection and in interprofessional and occupational envy. Equal payment of administrator and technician will get rid of a powerful source of job discontent. A closing of gaps in all career scales will improve group morale at all levels and provide a much-needed social cement.

I hope I have shown that, despite alarms and excursions, mankind is in fact making good and steady progress. In Britain the health of the nation is better than ever before. With relatively simple action we should be able to sustain this improvement. Rudolf Vichow's famous remark that "medicine is a social science, and politics nothing but medicine on a large scale" is increasingly seen to be true.¹⁵ Our diagnoses can no longer be limited to an individual's diseases. In the quest of health for our patients we have to embrace social and economic pathology. But we shall only influence political action if, in our new disciplines, we are as intellectually rigorous as we would be in the post-mortem room or the biochemistry laboratory.

Maps were reprinted from *Man, Environment and Disease in Britain* by kind permission of Professor G M Howe, department of geography, University of Strathclyde, and David and Charles, publishers.

*This was written before the Government's anti-inflation policy of July 1975.

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