supplies of these drugs, and in particular the much-favoured benzodiazepines.

The primary aim of the cost-saving policy was not, of course, to reduce consumption of the drugs concerned, but needless to say a reduction, above all in the widespread use of psycho-sedatives including hypnotic drugs, would be welcomed. Whether this secondary aim is achieved remains to be seen, as official statistics are not yet available. The possibility exists, however, that prescription habits may change instead. The non-toxic benzodiazepines might be partly replaced by cheap, old-fashioned remedies such as meprobamate, and barbiturates, or even small doses of major tranquillisers. The latter are still subsidised by our health service. If the total consumption of psychoactive agents does not change (but is distributed in other drugs), it may carry undesired toxicological implications.

Takeover of the benefit associations

By April 1973 the century-old sick benefit associations were dissolved and were replaced by our present national health service, the "Sygesikring." For ages they had served the public well in close and satisfactory co-operation with doctors. Nevertheless, it was considered practicable for the state to take them over, as it already administered all other sections of health care and had done so for many years.

From 1974 negotiations took place between GPs and the health service to update the contract which had been inherited from the defunct sick benefit associations. It was assumed that only minor problems existed between the two sides, and, though negotiations went on for such a long time, no real conflict was

envisaged. Even in the autumn of 1975, when difficulties arose over some aspects of the contract, the risk of a conflict was spoken of only as a bad joke.

Then, all of a sudden, in the last week of November, the GP section of the Danish Medical Association announced that it would break away from the health service on 1 December. Everybody was incredulous but no compromise was found, so since December all GPs have been practising privately with a direct financial relationship with their patients. It is indeed an odd situation to see patients paying the receptionist before leaving the surgery and, for the GP himself, it is an equally peculiar sensation personally to settle accounts with patients on home visits. To the practice staff it means a lot of extra work, book-keeping and so on, but, apart from that, life is not very different. Patients come as usual, work is done as always and they get full reimbursement at the local branch of the health service. Very little dissatisfaction is noted, though it is a nuisance for everybody. Nobody has the faintest idea when the conflicting sides will resume negotiations and perhaps we shall continue as we are for quite a while.

Some day, of course, a solution must and will be found but, deplorable though such matters are, I am not at all sure that a contractless period may not have its brighter side. Even if daily life and work goes on much as usual, the public and doctors alike now realise what was nearly forgotten—that it is in fact a great advantage for all financial aspects to be kept outside the doctor/patient relationship. And to the people in the health service, it might be beneficial for them to note that the GP service continues to function as if nothing had happened, and that a continuous contract is by no means a *sine qua non*.

Today's Treatment

Endocrine and metabolic disease

Obesity

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General considerations

The medical management of obesity is notoriously unsatisfactory. Only a relatively small percentage of patients lose weight effectively and a large proportion of these subsequently regain weight.¹ Weight loss, however, is only one aspect of managing the overweight patient, who will have sought medical advice either because of obesity or for some other reason which may or may not be a complication of obesity. The finding of a condition such as diabetes, ischaemic heart disease, or a hiatus hernia may provide a clear-cut justification for recommending weight loss. Sometimes, however, emphasis on weight loss may be unrealistic and of secondary importance when compared with other

aspects of their management, such as stopping smoking in the obese, breathless, chronic bronchitic.

Patients who seek medical advice primarily for obesity are often distressed for cultural or psychological, rather than physical, reasons. They are a self-selected group who have failed with self-imposed dietary control and often with other measures, which may have included membership of one of the various slimming clubs (these latter produce satisfactory results for many patients).² This self-selection may possibly explain in part why results obtained in clinical practice are often disappointing. If the doctor is to help he must first try to determine the reason for the request for medical help. Patients will only reduce if they are appropriately motivated and are aware of the underlying cause of their weight gain. The direct question, "Why do you want to lose weight?" will often provide a revealing answer. Sometimes it will show that the management should be primarily supportive as in those who have failed to appreciate that weight gain was caused by, rather than the cause of, some underlying unhappiness.

Many patients have an unrealistic concept of the expected rate of weight loss and are in danger of becoming disheartened while

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actually making satisfactory progress. To prevent this the clinician should explain that any initial dramatic reduction is largely caused by loss of fluid, rather than fat, cannot be maintained, and may indeed be followed by weight regain due to fluid retention. He should emphasise that an average weekly weight loss of "only" 0.5 kg is excellent and would result in an annual loss of 26 kg (almost exactly 4 stone). The patient must realise that factors other than degree of adiposity can affect weight in the short term and must be advised against weighing at intervals of less than one week and of paying excessive attention to weight change from week to week. The patient should be given the opportunity of attending at self-determined time intervals. Failure to make satisfactory progress should not provoke criticism, but rather further inquiry into the difficulties being experienced. In summary, the doctor whose support has been sought must first achieve satisfactory rapport so that he can help the patient overcome various metabolic and psychological factors which tend to perpetuate obesity.

Exercise

In the absence of an effective thermogenic agent, increase in physical activity is the only method of increasing energy expenditure, which is characteristically less in the obese than the non-obese. Although considerable activity is required to utilise 1 kg of adipose tissue the need to encourage the obese to take exercise is absolute. It should be emphasised that walking an additional 1-2 miles daily should produce an annual loss of up to 6 kg provided that calorie consumption is kept constant. Unless there is a medical contraindication all obese patients should be given clear individual advice about the best way of increasing physical activity.

Dietary control

The mainstay of any weight-reducing plan must be diet. Although many factors, including meal frequency and composition, may be of minor importance the success of dietary control depends on the ability of the patient to adhere to a regimen which must provide fewer calories than the daily energy expenditure and lead to a permanent change in eating habits.

Sometimes a dietary history will show that both objectives may be achieved by permanently cutting out one or two items such as potatoes, sugar, or alcohol. More often, however, additional advice will be required. Most obese people gain weight because of excessive carbohydrate consumption and this emphasises the popularity of regimens based on carbohydrate rather than total calorie restriction. A calorie, however, is a calorie and the regimen best suited to any one patient must take into account such considerations as occupation and may be found only by trial and error. Inadvertent cheating may most easily be detected, and corrected, by asking the patient to record accurately each total daily intake. Such a record may also show major faults in eating habit, such as nibbling while watching television or periods of uncontrollable carbohydrate gorging. It provides the basis of the behavioural approach, whereby the patient is first made aware of the various faults in his eating pattern by detailed recording of not only the nature and calorie value of food eaten, but also such aspects as time taken for meals, the place of eating, the degree of hunger and mood, physical position, and associated activities at time of eating. Corrective measures may then be introduced step by step and are tailored to deal with the various faults. This approach is time consuming but may sometimes prove very effective.³

There are many commercially available low-calorie foods. These include formula diets such as Metecol and Slender, products such as Trimmets, Limmits, and Bisks, and various low-calorie soft drinks and crispbreads. Patients incapable of adhering to more conventional diets may achieve weight loss by substituting one or more meals with a "formula diet," but sooner

or later they default from strict adherence and tend to regain weight. There is no evidence that the use of formula diets helps to correct basic faults in eating behaviour but low-calorie foods are of value if they can be incorporated on a permanent basis—for example, low calorie crispbreads may be substituted for bread and artificial sweeteners for sugar.

Starvation

Although the dangers of therapeutic starvation have been reduced by a clearer understanding of the metabolic consequences of fasting, it is not without risk. The serious complications include electrolyte imbalances, cardiac arrhythmias, and, occasionally, sudden death. These hazards are such that costly stays in hospital are necessary. Therapeutic starvation, therefore, may only be justified if it produces long-term weight losses greater than those achieved by more conventional treatment. A critical appraisal of follow-up results after fasting for periods of up to three weeks show that this is not the case—either in patients with "refractory obesity" or at the time of initial referral to a hospital clinic.⁴ The follow-up results remain disappointing even when therapeutic starvation is continued to within a few kilograms of ideal weight. In spite of correcting the metabolic consequences of obesity and despite the psychological incentives which might be expected from reduction to a personally and socially acceptable weight, rapid weight regain is common. It is difficult to justify prolonged fasting at least until some improved selection method can reduce the present high failure rate. It is important, however, to remember that weight change is only one aspect in managing obesity and some patients may obtain tangible benefits from starvation despite subsequent regain in weight.

A low-calorie formula diet providing 0.75-1.5 MJ/day (180-360 kcal/day) has been suggested as an alternative to complete fasting and has the advantage that it can be used for outpatients. The regimen shares, however, the disadvantages of formula diets and its long-term efficacy is unestablished in patients who successfully adhere to it.

Drugs

The value of the various drugs which have been used in managing obesity have recently been reviewed.⁵ They can be assessed in terms of efficacy, side effects, and cost.

Methyl cellulose and other bulk agents are cheap, safe, and completely ineffective.

Diguanides produce modest weight reductions in non-diabetic subjects. Their mode of action is uncertain and their clinical value limited.

Thyroxine and *triiodothyronine* may produce weight loss in non-endocrine obesity but their use is potentially hazardous and should be confined to patients with biochemical hypothyroidism.

Phenylethylamine derivatives

Phenylethylamine derivatives fall into three groups.

Amphetamine, *D-amphetamine*, and *phenmetrazine* are potential central nervous system (CNS) stimulants with anorectic properties and have been extensively abused. These drugs, and preparations containing them, should never be prescribed.

Phentermine, *chlorphentermine*, and *diethylpropion* are also CNS stimulants, but provided appropriate precautions are taken the danger of dependence appears to be acceptably low. When administered to patients with "refractory obesity" weight loss is disappointing and short-lived and weight regain usually occurs when the drug is discontinued. Improved results may be obtained by earlier prescription but there is no firm evidence that the use of these, or any other drugs, facilitates a permanent change in eating habit. They should not be prescribed to patients with

cardiovascular disease or hypertension. They are probably most effective in the depressed. They should be administered intermittently with intervals of not less than four weeks between monthly courses as this is as effective as, cheaper than, and less likely to cause addiction than continuous treatment. It should be explained to the patient that courses will only be repeated if significant weight regain does not occur during the four-week intervals, which should encourage the patient to establish good eating habit. Of the proprietary preparations of phentermine available, Duromine is clearly preferable to Ionamine (table I). The cost of Apisate and Tenuate Dospan are comparable and paradoxically both cheaper than Tenuate (table I).

Fenfluramine, although structurally related to amphetamine, has anorectic properties without causing CNS stimulation. Drug dependence may develop but addiction is not a problem. Side effects include lethargy, diarrhoea and other gastrointestinal upsets, vivid dreams, and reversible alopecia, but the major drawback is depression, which is especially likely to occur if the drug is withdrawn abruptly.⁶ For this reason it should never be prescribed intermittently and should be discontinued stepwise under close medical supervision. Given continuously, its anorectic effect is similar to that of intermittent phentermine but appears to last longer than the other amphetamine analogues and may be related to dose. Individual response, however, is extremely variable. It is probably most effective in anxious tense patients and should be avoided in the depressed. The theoretical advantage of Penderax Pacaps (twice as distinct from thrice daily) does not justify the additional cost (table I).

Mazindol

Mazindol, although unrelated to the amphetamines, is a CNS stimulant. Some reports of its clinical efficacy are encouraging⁷ but others are equally disappointing⁸; its major interest may be its chemical novelty.

TABLE—Cost of currently available anorectic drugs

Approved name	Dose in mg	Proprietary name	Cost per 30 days at recommended dose*
Diethylpropion	75	Apisate	43p
	75	Tenuate Dospan	44p
	25	Tenuate	67.5p
Phentermine	30	Duromine	£1.10
	30	Ionamin	£2.95
Fenfluramine	20 tablets	Ponderax	£5.07.5
	60 capsules	Ponderax Pacaps	£5.65
Mazindol	2	Teronac	£2.59
L- & D-amphetamine	20	Durophet	50p
Phenmetrazine	30	} Filon	£2.02.5
Phenbutrazate	20		

*Derived from MIMS, June, 1975.

Bypass surgery

During the past few years an increasing number of patients with morbid obesity have undergone various bypass operations designed to produce weight loss by inducing a state of malabsorption. The most popular procedure is an end-to-side anastomosis of the first 33 cm of jejunum with the terminal 10 cm of ileum. The immediate operative mortality is about 4%. The operation results in steatorrhoea and explosive diarrhoea is common. This may be associated with excessive and distressing flatulence, anal excoriation, and prolapsing haemorrhoids, though these symptoms may settle with time. Other complications include an increase in the formation of renal and gall stones and impairment of liver function, occasionally resulting in hepatic failure. Polyarthritis is not uncommon; electrolyte imbalances are the rule; and without appropriate replacement treatment vitamin deficiencies must occur. Life-long medical follow-up is essential as the long-term consequences have yet to be evaluated. There is some evidence to suggest that the complications may be reduced by end-to-end anastomosis and by leaving a longer segment of ileum in continuity.

After the operation patients occasionally fail to lose weight. Others may reduce to less than their ideal weight and require re-anastomosis. Most, however, lose some 30-40 kg and then their weight stabilises within two years of surgery while still considerably above the ideal.⁹ Most express themselves satisfied with the operation and many benefit psychologically.¹⁰ The immediate mortality, postoperative complications, and uncertainty about the long-term effects, however, are such that bypass surgery should only be undertaken as a last resort in patients with gross morbid obesity and in centres where its ultimate efficacy can be objectively evaluated.

Conclusions

For weight loss to be effective it must be sustained. This can be achieved by bypass surgery, a mutilative operation with an appreciable mortality, inevitable side effects, and unknown long-term sequelae. The alternatives to surgery are to promote energy expenditure by considerably increasing daily physical activity or permanently to alter previous bad eating habit by making appropriate changes in diet. Some patients fail to achieve this change and there is very little evidence to suggest that permanent changes in eating habit can be brought about by the use of drugs, formula diets, or starvation. Weight loss, however, is only one aspect in the overall management of the obese, many of whom may benefit from sympathetic support and thereby learn to live with their obesity just as a dyspeptic may learn to live with his ulcer.

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What are currently considered to be the safe and acceptable limits for nitrate—expressed as NO₃ not nitrogen—in a public water supply? At what level should mothers of young babies be warned and advised to make up their feeds from an alternative low nitrate supply to avoid the risk of methaemoglobinaemia? In areas where high nitrates are present is there any evidence of nitrosamines being carcinogenic?

To avoid methaemoglobinaemia in infants, the level for nitrate (expressed as the ion NO₃) in a public water supply should not exceed 45-50 mg/l of water. Where this level is exceeded medical and health authorities should be warned to watch for cyanosis in young babies. Mothers should be supplied with low-nitrate water for milk feeds. There is some margin of safety in the above figures to cover other causes of methaemoglobinaemia, such as the lack of certain enzymes in infants, their gastric juices being less acidic, and some of their food, such as spinach, already having a high nitrate content. A more important factor is that prolonged boiling of high-nitrate water used to make milk feeds concentrates the dissolved solids, including the nitrate. Fresh tap water should be used to prepare each milk feed and the water heated but never allowed to simmer or boil for more than a few seconds. The nitrate content would have to be at a much higher level than that quoted above to form nitrosamines in humans. Processed meat and fish and canned goods are more likely sources or precursors of nitrosamines. There is no evidence that public water supplies in Britain contain nitrate in such amounts as to cause pollution from nitrosamines.¹

¹ *Aqua*, 1974, 1, 3. London, International Water Supply Association.