have a quick cup of coffee, and then go to the hospital to try his hand at a partial gastrectomy.

The family practitioner in hospital may well be able to help the consultant: the former deals with people, and the latter often only with cases. Patients still come back from hospital complaining that no one told them anything, and that they were too afraid to ask. Experience as a clinical assistant in this country, and as a locum GP in Canada, has convinced me that part-time work in hospital is the best form of postgraduate education.

"Admitting privileges" to hospital in North America are valued by practitioners, and are certainly not abused. There is no genuine reason why they should not be instituted in Britain

for those doctors who would like them; they add interest to a GP's life and could, to some extent, ease the load on consultants.

The medical record envelope has changed little since it was introduced in Lloyd George's original health scheme, but steps are now being taken to provide A4 folders. This is a welcome innovation but it entails some expense, and the DHSS must give financial help towards the provision of new filing systems and the larger amount of storage space required for them.

Someone once asked Groucho Marx what he thought about sex. "Its here to stay," was his reply. The Health Service is undoubtedly "here to stay" so the final plea is—"Give the family doctor scope to realise his full potential."

Today's Treatment

Diseases of the alimentary system

Constipation and laxative abuse

KIKO RUTTER, DOUGLAS MAXWELL

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Normal defecation is characterised by the easy, regular, and complete passage of formed motions. The elimination of dietary waste is a fundamental physiological process, but the range of normal bowel pattern is wide, as individual bowel habit is determined by cultural, social, and psychological factors. Surveys have shown that most apparently healthy people have a bowel action between three times a day and three times a week.¹ Medical opinion has now swung away from its earlier rigid insistence on the need for a regular bowel action, and there is no evidence that infrequent bowel motions cause autointoxication or result in various common symptoms such as headache and lassitude. Nevertheless, this widespread misconception, fostered by popular myth and assiduous advertising, dies hard among the public. In a survey of Londoners² over 30% were found to be self-medicating with laxatives, and in both Britain and the United States vast sums are spent yearly on prescribed and over-the-counter cathartics. For most people this drug habit is quite unnecessary. Although a harmless waste of money in most cases, laxative abuse by a few patients constitutes an appreciable health hazard.

Physiology of defecation

Rational treatment of the various forms of constipation depends on understanding normal and disordered colonic physiology. Two aspects are briefly considered here.

Colonic motility and transport—After absorption of nutrients in the small intestine the residue is presented to the colon, where further absorption of water and electrolytes takes place. Waste material is moved towards the rectum by several types of motor activity, including tonic contraction, segmentation, and transport (peristalsis or less commonly mass movement). Much recent understanding of colonic activity has been derived from measuring intraluminal pressures. From such studies has come the concept of "paradoxical motility." High intraluminal pressures (as may occur in diverticular disease and the irritable colon syndrome) may indicate slow or absent transport, as high pressures are generated by decreased volume together with an obstruction to the outlet. Conversely, rapid transport occurs in the absence of outlet obstruction, so that any pressure gradient will result in rapid movement of contents. Thus constipation, which is popularly thought to result from a lax, atonic colon, may also be associated with a hypersegmenting, high-pressure bowel. (Similarly, diarrhoea may occur in patients with a tube-like, low-pressure colon.) The practical implication of these findings is that while antispasmodics may be beneficial in constipation associated with high intraluminal pressure the use of stimulant laxatives in this form of colonic dysmotility is irrational.

Mechanism of defecation—Continence is maintained by the anal sphincters and the flap-valve mechanism of the anorectal angle. As the rectum fills and becomes distended the desire to defecate occurs and the reflex is started. The sphincters and puborectalis relax, abdominal and chest wall muscles contract, intra-abdominal pressure increases, and the rectum is evacuated. Defecation may be voluntarily inhibited, and an important factor in the development of constipation is the failure to answer the call to stool. If this is persistently ignored the sensory stimuli evoked by rectal distension eventually are suppressed and reflex defecation is inhibited.

Constipation

True constipation may be defined as a decrease in the frequency of bowel movements accompanied by the difficult passage of excessively hard stools. Defecation is prolonged and may be accompanied by local anorectal pain and a sense of incomplete evacuation.³ Indeed, severe constipation, especially in the elderly, may result in impaction of rock-like faeces in the rectum and be associated with spurious diarrhoea.

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Most people who claim to be "constipated" probably do not satisfy any reasonable definition of this disorder. When true constipation exists most patients belong to the category of simple or primary constipation (appendix I). They often give a long history and have no underlying colonic or systemic disease. The problem may be regarded as another disorder of affluent life-style, which results from a combination of inadequate bulk in the diet, insufficient exercise, and persistent failure to answer the call to stool.

Occasionally constipation is due to some disorder of colonic motility. Although the underlying motor disturbances are poorly understood, some forms are considered to result from hypomotility—for example, constipation in pregnancy and idiopathic slow-transit constipation (diagnosed by the slow transit of radio-opaque markers). A different form of colonic dysmotility probably accounts for constipation in the irritable bowel syndrome and diverticular disease. Here excessive disorderly motor activity (paradoxical motility) results in areas of high pressure and hypersegmentation and accounts for these patients associating abdominal pain with constipation.

Constipation is also recognised as a complication of various organic diseases (both local and systemic) and often accompanies certain psychiatric disorders. Finally, an iatrogenic explanation for constipation should always be considered and a careful drug history taken.

Medication

The terms aperient, cathartic, evacuant, laxative, and purgative are used synonymously to describe agents that promote evacuation of the bowel. An extraordinary range of drugs is available for constipation: the current edition of the *British National Formulary* lists 14 approved preparations, while the *Monthly Index of Medical Specialities* describes 45 proprietary preparations. In the United States over 700 different over-the-counter laxative preparations are available.

Although many laxatives may have more than a single mode of action, agents used in treating constipation may be conveniently (if arbitrarily) classified in five main categories—namely, bulk producers, stool softeners, lubricants, osmotic agents, and chemical stimulants (appendix II). In addition to these agents, compounds given per rectum include fluid and lubricant enemas and suppositories containing stool softeners and irritants.

BULK PRODUCERS

Western diet has undergone profound changes in the past century, principally caused by increased consumption of sugar, fat, and processed foods and by a reduction in unabsorbed dietary fibre (roughage). Although it is difficult to consider any one of these items in isolation, epidemiological studies suggest that the low fibre content in refined foods of industrialised countries may be an important contributory factor in various bowel disorders, including appendicitis, diverticular disease, irritable bowel syndrome, and even colonic cancer. These speculations are unproved, but there is little doubt that fibre affects bowel habit and is often an effective remedy for constipation.⁴ Recent studies, for example, have shown that the daily addition of 10 g unprocessed millers' wheat bran and the substitution of wholemeal bread for white bread increased daily faecal weight, softened the stools, and decreased mean intestinal transit time by almost 30% in a group of schoolboys.⁵

The precise mechanism of action of a high-fibre diet on intestinal physiology is unknown. Undoubtedly fibre-containing foodstuffs are hydrophilic, retain water in the bowel, and tend to soften the faeces. Other properties, however, such as binding of the bile salts and increasing faecal output of volatile fatty acids, may contribute to the cathartic effect.⁴

Dietary fibre is an ideal and natural source of increased bulk, and the most convenient source of crude fibre is a breakfast cereal containing bran. For patients who have difficulty in getting enough fibre-containing foodstuffs, however, several processed preparations are available (appendix II). All hydrophilic bulk laxatives should be taken with plenty of fluid to

prevent obstructing boluses forming, and the dose adjusted until the required effect is obtained. They should not be prescribed for any patient with stenosing or obstructing intestinal lesions but are otherwise safe, and as the most physiological form of laxative they are suitable for long-term use should this be necessary.

STOOL SOFTENERS

Stool softeners are surface-active agents on account of their detergent properties. They allow water to penetrate the faecal masses, causing stool softening, and also increase permeability of gut mucosa. They are commonly used with stimulant laxatives—for example, bisacodyl-dioctyl (Dulcodos) and danthron-poloxalkol (Dorbanex)—and are undoubtedly effective. A theoretical objection to these drugs, however, concerns their possible deleterious effect on intestinal absorption. As long-term ingestion of agents that affect surface tension may be harmful, the use of stool softeners should be restricted to patients with hard faecal masses, particularly when associated with painful anorectal disease.³

LUBRICANTS

The continuous use of lubricants such as liquid paraffin or mineral oils no longer has any place in treating constipation. In effective dosage oral seepage is an unpleasant side effect and, particularly in elderly and debilitated patients, there is a real risk of aspiration and lipid pneumonia. Interference with absorption of fat-soluble vitamins has been reported, and there appears to be a slightly increased risk of developing gastrointestinal malignancy.³

OSMOTIC AGENTS

Osmotic agents are unabsorbed solutes that retain water in the small bowel and increase the flow of fluid into the colon. In effective doses these agents may result in urgency and fluidity of stools.

Apart from the unpleasant effect of a liquid purge, excessive absorption of sodium or magnesium ions may pose a threat, particularly to patients with cardiac or renal failure. Although useful for acute evacuation of the bowel, they do not encourage a return to normal function (unlike the bulk purgatives) and have no place in the long-term management of constipation. Their routine use should be confined to evacuation of the bowel for endoscopic procedures and in the prophylaxis of hepatic coma.

Lactulose is a synthetic disaccharide (galactose + fructose). As there is no corresponding disaccharidase in the small bowel to hydrolyse this sugar it reaches the colon virtually unchanged. There it is broken down by bacteria to non-absorbable organic anions with a resultant osmotic catharsis (simulating the effect of lactose in people with lactase deficiency). Recent trials have established that lactulose is an effective although expensive laxative, and it is claimed to be more acceptable than conventional osmotic purgatives. The role of this relatively new agent, however, is not yet established. It may have a place in treating elderly or debilitated patients who do not respond satisfactorily to stimulant laxatives.

CHEMICAL STIMULANTS

Various compounds belong to the chemical stimulant group, some having been known since antiquity. Although the precise mode of action of these drugs is not clear, they all stimulate peristalsis by direct contact with colonic mucosa. In addition to stimulating gut motility these chemicals interfere with normal salt and water absorption.³ They should be prescribed when the

colon contains an adequate amount of bulk. The effect of most of these drugs is delayed for six to nine hours, so they should be taken in the late evening.

Stimulant laxatives are undoubtedly effective but should be used with caution, as they all produce undesirable and occasionally dangerous side effects. Taken regularly they may be habit-forming and can produce electrolyte disturbances, histological changes (melanosis coli), and even structural damage with toxic degeneration of myenteric plexuses, and eventually severe and permanent interference with colonic motility.⁶

Some of the drugs in this category are best avoided completely. Oxyphenisatin is now known to cause both acute and chronic hepatitis (the latter closely resembling chronic active liver disease) and has now been withdrawn from use in Britain. Castor oil, which has a rapid action, stimulates both small-bowel and large-bowel peristalsis, causing painful contractions, and is thus not suitable for routine use. Phenolphthalein should be avoided because of its propensity to cause fixed drug eruptions but is still widely available in many proprietary mixtures. The effectiveness of bile salts in treating constipation has recently been confirmed in a trial of cholic acid. Their long-term effects are unknown, however, and until they have been shown to be safe and to have definite advantages over established drugs they are best avoided. Of the stimulant laxatives only senna derivatives and bisacodyl can be recommended for general use, and then ideally only for short periods.

Management of constipation

When true constipation does exist an attempt must be made to achieve a specific diagnosis. Patients should be questioned about their general health, frequency and character of bowel motion, associated abdominal pain, nature of diet, occupation, and any drug treatment. Constipation associated with weight loss, abdominal pain, or fresh rectal bleeding, particularly in the elderly, should alert the doctor to possible serious organic disease. Ideally, all patients should have an abdominal and rectal examination to exclude any local rectal or anal lesion. If the rectum is loaded with faeces it is likely that reflex defecatory mechanisms have become dulled and that bowel re-education rather than medication will be required.

SIMPLE MEASURES

In practice, constipation is usually primary or caused by some disorder of colonic motility (appendix I). When an organic cause has been excluded the patient should be reassured that although a daily bowel movement may be desirable it is by no means essential and that a less frequent bowel motion may be quite normal for many people.

Patients with simple constipation require advice about the importance of re-establishing a satisfactory bowel habit without the need for regular laxatives. The call to stool should never be ignored, however inconvenient this may be, and time should be allowed for unhurried defecation. Patients should be advised to take more exercise and to increase their intake of fluid and unabsorbed dietary fibre—for example, with wholemeal bread, bran, or bran-based cereals.

LOADED COLON

Before these simple adjustments to life-style are effective in re-establishing a satisfactory bowel habit it may be necessary to empty a loaded or impacted rectum, especially in elderly or debilitated patients. Various therapeutic measures are useful. These usually include initial treatment with a stool softener or other laxative, followed by suppositories (glycerin, bisacodyl) or

by evacuant enemas (arachis oil retention enema, phosphates enema). In addition, digital evacuation may be needed. Tap water or soapy water enemas should no longer be used because of the risk of water intoxication.

REGULAR LAXATIVE TREATMENT

Patients with primary constipation should not need regular laxatives. If the simple measures outlined above are unsuccessful, however, some form of bulk laxative may be needed, at least temporarily. Stimulant cathartics should be avoided both in these patients and in those with the irritable bowel syndrome. Nevertheless, they may be useful when there is diminished colonic motor response to increased luminal bulk, as occurs in elderly or debilitated patients, or in those with idiopathic slow-transit constipation. Standardised senna (Senokot) is probably the most acceptable stimulant preparation. Osmotic and lubricant laxatives are not recommended for regular use.

In a brief review such as this only general guidelines are presented. A more detailed discussion, with particular reference to specialties such as paediatrics and obstetrics, is available.³

Laxative abuse

The long-term use of laxatives ultimately leads to increasing constipation and the resort to even stronger purges. Eventually continuing catharsis itself becomes a health hazard. The syndrome of laxative abuse is now well documented, and two groups of patients at risk have been recognised.⁶

The first group includes patients with a long history of chronic constipation and increasing dependence on laxatives. With time the response to drugs is diminished, possibly as a result of damage to intrinsic nerve plexuses in the gut. Laxatives are then taken in increasing doses and variety. Ultimately the colon, especially on the right side, may become atonic and dilated—the so-called cathartic colon. These patients are often helped by withdrawing irritant drugs and substituting a high-residue diet and osmotic laxatives. If the colon has been irreversibly damaged, however, colectomy and ileorectal anastomosis may be needed.

A second group, usually women, take laxatives inappropriately and may go to great lengths to conceal the habit. Most of these women have some form of personality disorder, and with their recurrent vomiting, pathological desire to lose weight, and illicit use of diuretics closely resemble patients with anorexia nervosa. They usually present with unexplained vague ill health and serious electrolyte imbalance. Continued fluid and electrolyte depletion may result in thirst, apathy, weakness, cramps, polyuria, impaired renal function, and secondary hyperaldosteronism. Steatorrhoea, protein-losing enteropathy, and osteomalacia have all been described. Although melanosis coli may be a valuable diagnostic clue on rectal biopsy, the radiological features of cathartic colon are seldom seen. Diagnosis may be difficult and treatment of the psychological disorder often unsatisfactory. Nevertheless, if patients can be persuaded to discontinue self-medication bowel habit can rapidly return to normal.

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APPENDIX I—*Classification of constipation**

Primary (simple) constipation

- Ignoring call to stool
- Inadequate bulk in diet
- Lack of exercise
- Unfavourable working/living/lavatory facilities

Secondary to motility disorder

- Dysmotility: irritable bowel syndrome, diverticular disease
- Hypomotility: idiopathic slow transit, idiopathic megabowel, pregnancy and elderly

Secondary to psychiatric disorder

- Depression and other chronic psychoses
- Anorexia nervosa
- Illicit laxative abuse

Secondary to known organic disease

- Colonic/rectal disease: obstructing lesions, Hirschsprung's disease, Chagas's disease
- Painful anal disease: fissure/abscess
- Endocrine/metabolic: dehydration, hypothyroidism, hypercalcaemia, lead poisoning, acute porphyria
- Neurological disease: paraplegia, multiple sclerosis

Iatrogenic disease

- Postoperative: pain, immobilisation, fluid depletion, bed-pan use
- Drug-induced: aluminium-containing antacids, codeine, hypotensives, anticholinergics, etc

*Modified from data given by Hinton.⁷

APPENDIX II—*Classification of laxatives*

Bulk producers

- Dietary fibre (bran, bran-based cereals, wholemeal bread)
- Mucilaginous polysaccharides from seeds and gums (Metamucil, Isogel, Normacol)
- Methylcellulose (Cellevac)

Stool softeners

- Synthetic surface-active agents (dioctyl sodium sulphosuccinate (Dioctyl), poloxalkols)

Lubricants

- Liquid paraffin
- Mineral oil-hydrocarbon mixtures (Agarol, Petrolagar)

Osmotic agents

- Sodium, potassium, and magnesium salts (magnesium sulphate, Epsom salts; magnesium hydroxide, Milk of Magnesia; sodium potassium tartrate, Rochelle salt)
- Lactulose (Duphalac, Gatinar)

Chemical stimulants

- Anthracene compounds (senna, Senokot; danthron, Dorbanex; cascara)
- Polyphenolic compounds (bisacodyl, Dulcodos, Dulcolax; phenolphthalein—for example, Agarol, Alophen, Veracolate; oxyphenisatin, Bydolax, Cirotyl, Contax—all now withdrawn in UK)
- Castor oil
- Bile salts (cholic acid; dehydrocholic acid, Dehydrocholin; mixtures: Taxol, Veracolate)

Contemporary Themes

Road safety: BMA comments

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The BMA was asked to comment on the chapter in the Government's consultative document on transport policy dealing with road safety. The comments, which have been agreed by the Chairman of the Board of Science's Panel on the Relationship of Alcohol and other Drugs to Road Accidents and by the Chairman of the Joint Panel on Driver Licensing, were endorsed by the BMA Council on 6 October. They include answers to three main questions posed in the consultative document.

Introduction

The control of road accident mortality and morbidity presents public health authorities in technically developed countries with the most intractable challenge of the second half of the 20th century. A large measure of control has been achieved over communicable disease, and over many other kinds of accident such as industrial accidents, leaving cancer, cardiovascular disease, and road accidents as the leading cause of loss of expectation of life. Moreover, there are reasons for believing that road accidents are becoming a major cause of permanent incapacity in the community, with serious consequences to the quality of life of the survivors, particularly those in the high risk group of young road users.

The BMA welcomes the emphasis which has been placed on human factors in paragraph 10.3 of the document. In the answers which we submit to the questions set out at the end of chapter 10 of the document we have examined the need for a scientific and epidemiological approach to the problem. We believe that acceptance by the Ministry of Transport of public health principles underlying the control of mortality and morbidity would lead to an improvement in the situation, as it has for many other causes of mortality and morbidity in the community. In particular we call attention to the small propor-

tion of research facilities devoted to human factors, and to the reasons underlying this serious handicap to the introduction of effective countermeasures.

In the light of the views expressed in recent annual reports of the Transport and Road Research Laboratory, we see little prospect of the necessary research being carried out on an adequate scale under the existing arrangements for administering research on road accident prevention. Accordingly, we strongly recommend that the Minister of Transport institutes the following steps.

(1) The Department of Health, as the Government department primarily responsible for the overall control of mortality and morbidity, should be asked to confirm the relative importance of road accidents.

(2) The membership of the bodies advising the Minister and the Director of Road Research should be examined to ensure that advice on the public health aspects of the problem are considered. (At present neither the Planning and Transport Research Advisory Council (PATRAC) nor the Advisory Committee set up to advise the Director on research policy includes any medically qualified members.)

(3) A proportion of the funds allocated for road research should be redirected to the Medical Research Council (responsible to the Department of Education and Science) on a consumer-contractor basis in order to ensure that the necessary research on human factors is undertaken. (The MRC has a number of units which have carried out distinguished studies in behaviour, including the Applied Psychology Unit at Cambridge which has already carried out some research at the request of TRRL).

The need to achieve the necessary liaison between the Government departments concerned is by no means a problem peculiar to this country. In France public concern over mounting road accident mortality and morbidity led to the appointment of a senior civil servant with direct responsibility to the Prime Minister for road accident prevention, over riding the reactionary attitudes of certain government departments concerned with the