correct dose rapidly, and one can imagine the reaction of parents if children are taken to be weighed before emergency treatment is given.

Doses should be stated clearly according to expected body weight by age and should be displayed in accident and emergency departments. Current recommendations for the treatment of anaphylaxis in a 5 year old child are that 0·4 ml of 1/1000 adrenaline should be given by intramuscular injection.[2,3]

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Teachers need to know the basics too

EDITOR,—A point not mentioned in Malcolm Fisher's review of the treatment of anaphylaxis is the need to remember that children are at risk of anaphylaxis while at school.[1] Once anaphylaxis has been diagnosed it is the doctor's responsibility to inform the school. Teachers must have clear guidelines to follow should an anaphylactic reaction occur, and they should be trained to deal with such an emergency. Teachers do not have a legal duty to give drugs in school, but, as adrenaline may be life saving, some members of staff must take the responsibility for giving it. Such staff must be guaranteed professional indemnity. There should be several trained members of staff in each school to cover emergencies. Adrenaline should be kept in the school, and an emergency kit and a trained member of staff should go on school trips with pupils at risk. During training, teachers should be made aware of the different types of anaphylactic reaction that may occur, how reactions may be avoided, and emergency management.

These issues must be addressed. Each child health department should draw up local policies and coordinate training for school staff. With careful planning, potential disasters in school may be avoided.

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Symptomatic carotid lesions in young adults

EDITOR,—In their paper on symptomatic stenoses of the internal carotid artery in young adults (aged 15-44) Antonio Carolei and colleagues conclude that the prognosis was apparently benign in a subgroup with complete occlusions.[1] Several factors need to be considered.

Firstly, although carotid angiography was performed in 73% of the study population, the number with occlusions that were angiographically confirmed is unstated.

Secondly, there were only eight patients in this subgroup. Although no neurological events were observed during five years of follow up, the effect of studying such small numbers is reflected by the confidence intervals of 0% to 32·4% for both transient ischaemic attacks and strokes. Other prospective studies, with larger number of patients,

Results of prospective studies of complete occlusions of internal carotid artery treated non-surgically

Study	No of patients	Deficit at entry	Duration of follow up (months)	Ipsilateral TIA		Ipsilateral stroke		Death	
				No	%/year	No	%/year	No	%/year
Fields *et al*, 1976[2]	359	40% Severe stroke	44	—	—	30 89*	2·3 6·8	155	11·8
Sampson *et al*, 1977[3]	7	TIA	17	4*	40·3	2	20·2	0	0
Cote *et al*, 1983[4]	47	TIA or minor stroke	34	24 27*	17·8 20·0	7 11*	5·2 8·2	4	3·0
EC/IC, 1985[5]	423	TIA or minor stroke	56†	—	—	123‡	≈6·3	§	—
Carolei *et al*, 1995	8	TIA or stroke	60	0	0	0	0	0	0

TIA=Transient ischaemic attack.
*Ipsilateral and contralateral events.
†Mean follow up for trial population.
‡Ipsilateral and contralateral fatal and non-fatal stroke.
§Included in column showing ipsilateral stroke.

suggest that the prognosis after total occlusions may not be entirely benign.[2-5] The variability in reported outcomes (table) may be related to differences in the patency of other extracranial or intracranial vessels in the populations studied. Indeed, recent evidence suggests that the prognosis after total occlusion of the internal carotid artery may depend on the residual cerebrovascular reserve capacities; stroke rates as high as 20% have been observed in the first year in those with poor reserves, compared with <5% in those with sufficient reserves. The benign prognosis in young adults reported by Carolei and colleagues, if confirmed, may be due to relatively unimpaired reserves in these patients.

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Authors' reply

EDITOR,—Ajith Goonetilleke proposes a possible explanation for the good prognosis in young patients with symptomatic occlusion of the internal carotid artery in our study. Goonetilleke's hypothesis about the role of the residual cerebrovascular reserve capacity is supported by recent studies that have used transcranial Doppler sonography[1] and is consistent with the young age of our patients. Unfortunately, transcranial Doppler sonography was not available in all participating centres at the time of the study, which hindered the evaluation of cerebrovascular reserve capacity in all patients. This factor, however, would be expected to influence the outcome in patients with stenosis of 50-99% as well; these patients, by contrast, had the worst prognosis.

In our series four of the eight occlusions diagnosed by Doppler sonography were confirmed by angiography, which also showed good collateral blood supply in all four cases. A contralateral stenosis was found on Doppler sonography in seven patients who presented with stenosis of the internal carotid artery of 50–99%, which confirms the low prevalence of coexisting carotid lesions. All of the eight patients with occlusion of the carotid artery had initially presented with stroke. After surviving the initial stroke these patients had no further cerebral ischaemic events and survived. One patient had a myocardial infarction.[2]

It is difficult to comment on data referring to older patients with diffuse atherosclerosis, who are more likely to have a poor prognosis. Indirect comparisons between patients from different studies (with the eventual aim of supporting the need for surgical procedures) may be misleading. On the other hand, the annual risk of stroke and death reported by the EC/IC Bypass Study Group in patients with occlusions (9.5%)[2] was higher than that in our young patients with occlusions but still lower than that reported in the North American symptomatic carotid endarterectomy trial in patients with carotid stenosis (21.5%).[3]

Despite the wide confidence intervals around the risk estimates, our figures for carotid occlusion are consistent with findings of other studies directly comparing patients with stenosis and occlusion of the internal carotid artery and showing a sudden drop in the risk of stroke once the artery occludes.[4] We remain confident that our data support the view that evolving carotid plaques are unstable and produce symptoms due to progression of the stenosis, whereas carotid occlusions are stable lesions.

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Beneficial effects of simvastatin may be due to non-lipid actions

EDITOR,—On the basis of new trial evidence Michael Oliver and colleagues claim that there is no longer any controversy about cholesterol lowering as secondary prevention of atherosclerosis and coronary heart disease.[1] To reach this conclusion they have disregarded many conflicting findings.

According to Oliver and colleagues, the first principle of the lipid hypothesis is the association between a raised plasma cholesterol concentration and risk of coronary heart disease. This association, however, has been found mainly in people without previous disease. A strong, graded, positive correlation has been found in a few studies of patients with coronary heart disease, but in at least 17 studies the correlation has been weak, dichotomous, or absent. Also, several studies have found no association between changes in serum

cholesterol concentration and the progress of angiographic signs of atherosclerosis; most studies have found no association between serum lipid concentrations and restenosis after angioplasty; and no trial has found a systematic association between the degree of cholesterol lowering and outcome.

Oliver and colleagues claim that angiographic trials have shown a decrease in cholesterol concentration to be associated with a lessening of atheromatous obstruction. To translate a microscopic widening or delay of angiographic stenosis to a lessening of atheromatosis, however, is premature, because early stages of atheromatosis are compensated for by an enlargement of the lumenal area,[2] indicating that a widening may be due to both an increase and a decrease in atherosclerosis. That the effect was due to cholesterol lowering is also questionable because a dose-response relation was not found in these angiographic trials.[3]

The Scandinavian simvastatin study is seemingly a good argument for cholesterol lowering, but simvastatin has other effects. At least two of them may be beneficial to cardiovascular disease independent of the cholesterol concentration.[4] Such effects may have operated in the Scandinavian study, because the outcome was independent of baseline lipid concentrations[4] and, according to the preliminary data presented at meetings arranged by Merck Sharpe and Dohme in Sweden, there was no dose-response relation with either total or low density lipoprotein cholesterol concentration.

Simvastatin may be of benefit in cardiovascular disease, but its effect seems unlikely to be due to the lowering of cholesterol concentration. It is also unlikely that its effect can be extrapolated to other treatments because one of the mechanisms mentioned above was studied after several cholesterol lowering drugs but found only after simvastatin; and, most importantly, four meta-analyses have found a significantly increased total or non-coronary mortality after drug treatment. The new trials do not verify the lipid hypothesis, and there is still much controversy about what to do.

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Withdrawing artificial feeding from children with brain damage

Treatment without benefit is irresponsible

EDITOR,—Ronald E Cranford revisits the issues surrounding withdrawal of treatment.[1] A multiplicity of published articles and many legal case reports on this subject already exist, particularly in the American literature, yet Cranford calls for further debate on the issues and the development of medical, ethical, legal, and social policies to enable us to deal with the process of withdrawing treatment.

The medical profession does not require any new ethical principles. What it must do is address the perceived difficulty from an alternative perspective. We must ask ourselves what outcome we are trying to achieve through continuing treatment.

In the case of the persistent vegetative state the patient, irrespective of age, is never going to recover to become a normal sapient person, and all the advanced technological treatment available will not alter this fact. Any treatment is therefore futile, and it is a long established principle of medical ethics that futile treatments need not—indeed, should not—be given. The learned writings of both Hippocrates and Plato refer to the irresponsibility of continuing treatment that will not result in a beneficial end point. The House of Commons select committee on medical ethics also reinforced this stance by commenting that continuing futile medical treatment was an irresponsible act.[2] Miles has argued that resisting medical futility is an implicit professional duty of the physician—that is, a prognostically astute physician should not prescribe treatments that cannot restore health to people who are terminally or irreversibly ill.[3]

By adopting this philosophy we do not require contrived or convoluted legal opinion, as seen in the Bland case,[4] or academic sophistry to solve what is presented as an impossible problem. If medical staff were prepared to speak up against non-beneficial and irrational treatments such as continued intravenous or gastrostomy feeding in the persistent vegetative state or anencephalic babies and, equally, the unethical experimental treatment of quadruple bowel-liver transplants or baboon heart transplants the profession would perhaps regain more credibility than it currently has.

Once we recover the principles of non-maleficence and beneficence then perhaps society will allow us to make sensible decisions regarding the continuation or abandonment of treatment.

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1 Cranford RE. Withdrawing artificial feeding from children with brain damage. *BMJ* 1995;311:464-5. (19 August.)
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Tortuous arguments evade the issue

EDITOR,—While I agree with much that Ronald E Cranford says in his editorial on withdrawing artificial feeding in brain damage, I am unhappy about his concept that the withdrawal of tube feeding does not constitute assisted suicide or euthanasia.[1]

It is ironic that the only reason that tube feeding has been identified as "treatment" has been so that it can be withdrawn. Much of the debate has concentrated on the argument that tube feeding is futile treatment. I would argue that tube feeding is extremely effective since it achieves all the things we intend it to do. What is really being argued is whether the patient's life is futile—hence the need to find some way of ending that life. Once this decision is made then whatever means we use to end that life must have the definite intention of doing so—that is, euthanasia. The medical profession's desire to avoid seeming to support euthanasia has produced a tortuous argument to show that we are not responsible for the death. In doing so we commit the patient, family, and caring staff to a slow dying process. If we are to act to end the life then it would show greater respect for the patient and family to do so quickly. ("Respect" is probably a more relevant concept than the more difficult to define "dignity.")

I share Cranford's concern about the involvement of the legal process in such cases. I am, however, also concerned that we do not yet have sufficient protection for patients without the intense scrutiny of the courts. We have yet to develop the guidelines and formal standards for making such decisions. We are seeing cases in which even eminent clinicians argue for the withdrawal of tube feeding though it becomes evident, from independent assessors, that this is against the patient's wishes.

As a profession we have much yet to do if we are to give society the confidence to trust our opinions.

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Hypocholesterolaemia in hairy cell leukaemia

EDITOR,—Gunnar Juliusson and colleagues found that hypocholesterolaemia associated with hairy cell leukaemia was not due to increased activity of low density lipoprotein receptors in tumour cells[1] or to tumour cell burden.[2] There are several possible causes of their findings in addition to the possible production of cytokines by the tumour and associated effects on the lipid metabolism of reticuloendothelial cells.

The lipid concentrations were inversely related to the size of the spleen. The rate at which the spleen increases in size is important as proliferating cells have an increased requirement for cholesterol and thus express large numbers of low density lipoprotein receptors. Juliusson and colleagues have assessed the activity of low density lipoprotein receptors using low density lipoprotein isolated from healthy subjects.[3] It is known that differences in the structure of low density lipoprotein (for example, due to changes in its apolipoprotein content or in the structure of apolipoprotein) can influence uptake by low density lipoprotein receptors. Thus change in the structure of low density lipoprotein related to the tumour is another possible cause for the observed hypocholesterolaemia. Under normal circumstances about one third of low density lipoprotein is cleared by a pathway that is independent of receptors,[4] and an increase in this mechanism in tumour cells could also account for the hypocholesterolaemia.

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Authors' reply

EDITOR,—John Hinnie and Denis StJ O'Reilly suggest that hypocholesterolaemia in hairy cell leukaemia may be due to increased clearance of low density lipoprotein by a pathway independent of receptors in rapidly proliferating hairy cells. Unlike some other lymphoproliferative disorders, however, hairy cell leukaemia is usually an indolent disease with a low rate of proliferation of cells. Furthermore, our assay of degradation of low density lipoprotein estimates both uptake of low density lipoprotein by tumour cells that is mediated by receptors and uptake that is independent of receptors.

We recently saw a patient with immunocytoma, another chronic lymphoproliferative disorder,