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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1 Fisher M. Treatment of acute anaphylaxis. *BMJ* 1995;311: 731-3. (16 September.)

2 Joint Formulary Committee 1994-5. *British national formulary*. London: BMA and Royal Pharmaceutical Society of Great Britain, 1995.

3 Joint Committee on Vaccination and Immunisation. *Immunisation against infectious disease*. London: HMSO, 1992.

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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1 Fisher M. Treatment of acute anaphylaxis. *BMJ* 1995;311: 731-3. (16 September.)

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 <i>et al</i> , 1976 ²	359	40% Severe stroke	44	—	—	30	2.3	155	11.8
		TIA				89*	6.8		
Sampson <i>et al</i> , 1977 ³	7		17	4*	40.3	2	20.2	0	0
Cote <i>et al</i> , 1983 ⁴	47	TIA or minor stroke	34	24	17.8	7	5.2	4	3.0
				27*	20.0	11*	8.2		
EC/IC, 1985 ⁵	423	TIA or minor stroke	56†	—	—	123‡	≈6.3	§	—
Carolei <i>et al</i> , 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.

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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1 Carolei A, Marini C, Nencini P, Gandolfo C, Motto C, Zanette E, *et al*. Prevalence and outcome of symptomatic carotid lesions in young adults. *BMJ* 1995;310:1363-6. (27 May.)

2 Fields WS, Lemak NA. Joint study of extracranial arterial occlusion. X. Internal carotid artery occlusion. *JAMA* 1976; 235:2734-8.

3 Sampson D, Watts C, Clark K. Cerebral revascularisation for transient ischaemic attacks. *Neurology* 1977;27:767-71.

4 Cote R, Barnett HJM, Taylor DW. Internal carotid occlusion: a prospective study. *Stroke* 1983;14:898-902.

5 EC/IC Bypass Study Group. Failure of extracranial-intracranial arterial bypass to reduce the risk of ischaemic stroke—results of an international randomised trial. *N Engl J Med* 1985;313: 1191-200.

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 sonography¹ 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

‡Ipsilateral and contralateral fatal and non-fatal stroke.

§Included in column showing ipsilateral stroke.

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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1 Widder B, Kleiser B, Krapf H. Course of cerebrovascular reactivity in patients with carotid artery occlusions. *Stroke* 1994;25:1963-7.

2 EC/IC Bypass Study Group. Failure of extracranial-intracranial arterial bypass to reduce the risk of ischaemic stroke: results of an international randomized trial. *N Engl J Med* 1985;313: 1191-200.

3 North American Symptomatic Carotid Endarterectomy Trial Collaborators. Beneficial effect of carotid endarterectomy in symptomatic patients with high-grade carotid stenosis. *N Engl J Med* 1991;325:445-53.

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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