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Pointers

"A Fifth Freedom?": Sir Dugald Baird discusses freedom from the tyranny of excessive fertility, and calls for a "positive policy of population control" (p. 1141).

Hay-fever and Pollen Asthma: Dr. R. S. Bruce Pearson reports that two injections of "depot pollen" compare favourably with multiple injections of "aqueous pollen." Desensitization should be begun in the first quarter of the year (p. 1148).

Goodpasture Syndrome: Dr. Janet Elder and colleagues describe four patients with pulmonary haemosiderosis, three of whom had an associated renal lesion (Goodpasture syndrome) (p. 1152).

Streptococcal Sore Throat: In a prospective study from general practice Dr. P. M. Higgins and colleagues investigate the relationship of streptococcal throats to acute nephritis (p. 1156).

Fluoresceinretinography: Dr. F. Skovborg and Dr. E. Lauritzen, of Denmark, discuss its use in differentiating microaneurysms from small cotton-wool exudates (p. 1160).

Prognosis in Bell's Palsy: Dr. O. A. Peiris and Dr. D. W. Miles find electrogustometry helpful in prognosis, especially if done in the first fortnight (p. 1162).

Oral Contraceptives and Strokes: Dr. L. Illis and colleagues report on the incidence of cerebral arterial occlusion in women aged 18–45 years, before and after the introduction of "the pill" (p. 1164). Letter from Medical Assessor, Committee on Safety of Drugs (p. 1180).

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Treatment of Cardiac Arrest in Acute Myocardial Infarction

The heart may stop suddenly at the onset of myocardial infarction, and this explains many sudden deaths outside hospital, often in apparently healthy people. Cardiac arrest also accounts for 20% of deaths in the period after the infarction.[1] Most occur in the first 24 hours—over three-quarters in the first week.[2] Ventricular fibrillation probably accounts for about 85% of these and asystole for the remainder.[3]

Many of these patients will have suffered a massive infarction that precludes more than temporarily successful resuscitation. Some, however, will have had only a mild infarction, of the type in which the mortality rate is usually less than 5%. In the latter cases unexpected sudden deaths are thought to be due to electrical instability of the myocardium. Thus a premature extrasystole occurring during ventricular relaxation (that is, in electrocardiographic terms, one that hits the preceding T wave, which is the vulnerable zone of the QRST complex) may spark off ventricular fibrillation,[4 5] which is a lethal arrhythmia, since it does not support a circulation. The "mild coronary patient" who has suffered this "electrical death" can sometimes be resuscitated. The evidence suggests[1 6–8] that resuscitation is usually unsuccessful in patients with cardiogenic shock or heart failure or evidence of massive necrosis of cardiac muscle. Even if the rhythm is restored, an early relapse and eventual death are likely. In other words, energetic resuscitation should probably be attempted only when the patient dies unexpectedly.

What then should be done by the practitioner for the person who dies at home or in the street or, say, on the golf course? If on the spot at the time he should immediately thump the patient's left breast once or twice as heavily as he can with the ulnar aspect of his fist. This "precordial blow" has on many occasions by itself induced sinus rhythm and thus saved a life.[6 9] External cardiac compression is begun immediately by pressing with the heel of the hand on the lower third of the sternum at a rate of about 70 per minute. The vertical pressure required should be sufficient to move the sternum inwards slightly. It can be done single-handed when the operator is not tired, and the full weight of his shoulders is not desirable. Those with experience of the technique are always surprised how little force is required to produce a circulation. The best indication of this is contraction of the pupils, as a peripheral arterial pulse wave may be produced in the absence of a circulation.[10] Very occasionally in a patient with ventricular fibrillation who has not stopped breathing a viable rhythm has appeared spontaneously during external cardiac compression.[6 11] If signs of life appear and persist during cardiac massage, it should be continued for five or ten minutes, but probably not longer unless the patient is near hospital. If the pupils remain dilated, the procedure should be stopped.

Besides maintaining the circulation, other important measures are oxygenation of the myocardium and brain (by mouth-to-mouth breathing

if respiration has ceased) and treating metabolic acidosis. The latter occurs very rapidly when blood supply to the muscles and other tissues is deficient, and must be combated energetically by intravenous sodium bicarbonate.[1 12 13] Thus some doctors will carry with them a large syringe with ampoules of 8.4% sodium bicarbonate and a mouth-to-mouth plastic airway, waiting for the once-in-a-lifetime opportunity to save a life. Much emotional feeling may be engendered in the operator and his helpers during these procedures, and the usual difficulty—especially with the inexperienced—is to know when to stop further hopeless attempts.

External compression (or closed chest cardiac massage), despite experimental findings to the contrary,[10] is now considered to be almost as effective as direct (open chest) cardiac massage, and so it seems unlikely that the latter will now be used in resuscitation except perhaps on the operating table. In hospital, while alternating current is probably as effective as direct-current shock when used on fibrillating ventricles with the chest open,[1] it is probably more harmful to the myocardium.[5] With the chest unopened it seems that a shock from a direct-current defibrillator is much more likely to be effective,[2 5 6] and this is the type of machine which should now be in general use. The same machine with a synchronizer is now used for electrical conversion of atrial fibrillation and other dysrhythmias to sinus rhythm.[5 14]

In hospital the selection of patients for intensive monitoring, perhaps in a special unit such as Dr. G. F. Crockett and Mr. A. Barr describe at p. 1173, is often difficult. At least one unit has devised a method of assessing prognosis (the "coronary prognostic index")[15] which is based on the patient's age and previous history, the presence and degree of shock, heart failure, and arrhythmia, and Q-wave changes in the electrocardiogram. A maximum score of 28 is theoretically possible and one of 17 has been found to be associated with a mortality rate of over 50% within 28 days. In the past doctors and nurses have been told to attempt resuscitation only in those persons whose score is less than 17.[6] Nevertheless, this sort of assessment is impossible in patients who develop cardiac arrest in the street. Many of these patients have sustained a major coronary occlusion, which has rendered a large area of cardiac muscle ineffective. In these cases immediate external cardiac compression will usually preserve an inefficient but supportive circulation temporarily, though the chances of successful defibrillation are usually slim and those for long-term survival even worse. This should not deter the doctor from attempting resuscitation, though he should realize that his chances of success are limited.

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Not so Fast

In addition to untold suffering and bereavement road accidents in Great Britain are currently estimated to cost the community more than £200m. a year. Medical treatment for the casualties alone costs about £13m. a year.[1] Anything which shows promise of reducing this charge on the nation's economy and medical services therefore deserves careful attention. One such measure is the speed limit, which has been a feature of built-up areas in Britain since 1935 and was this year applied to some 400 miles of important rural main roads having an accident record above the national average. What is the evidence for its value?

The distance required to bring a vehicle to rest, perhaps in order to avoid a collision, is not directly proportional to the speed but to the *square* of the speed.[2] For instance, a car travelling at 30 m.p.h. moves through a distance of 44 ft. in one second and cannot stop in less than 75 ft. under ideal conditions of road, vehicle, and driver. At 60 m.p.h. it travels 88 ft. in one second but requires 240 ft. to stop in ideal conditions.[3] Considerably more than these distances is usually needed in practice, but observations on the road have shown that drivers often travel much closer to the vehicle in front than the minimum safe distance.[4] Of the accidents on the London–Birmingham motorway reported in 1960 and 1961 (apart from those at terminals and junctions) 24% involved a vehicle colliding with the rear of another moving vehicle and 6% involved collision with a stationary vehicle.[5] Faulty brakes are more prevalent than might be thought. For instance, spot checks of vehicles on the road made by Ministry of Transport examiners in 1963 showed that one-quarter had defective brakes.[6] Furthermore, the effects of a mechanical failure of some part of the vehicle (for example, burst tyres, overheating, or shattered windscreens) are also aggravated by high speed.

When the road surface is wet, as it is for about one-fifth of the time in this country, the risk of a skid is greater at high speeds than at low speeds because the layer of water between the tyre and road surface is not always squeezed away fast enough for adequate contact between the road and tyre to be maintained. Surfaces which are smooth or have relatively few rough projections also offer less resistance to skidding as the speed of a vehicle increases. Other effects of high speed are of special interest to medical men. For instance, a driver's estimate of the speed of a vehicle is less accurate at higher speeds[7]; lettering on road signs which is legible at low speeds becomes inadequate for conveying messages to a fast-travelling driver[8]; and some types of individual, after taking alcohol, drive at more than their normal speeds.[9]

These results of research into road safety indicate that when vehicle speeds increase and other things remain constant there is a deterioration in each of the factors making for safety. Therefore a reasonable inference is that accidents would be fewer if speeds were lower, and many studies made before and after the imposition of speed limits in Great Britain or abroad have verified that. For instance the 30 m.p.h. limit imposed in built-up areas of Great Britain in 1935 was followed by a 6% reduction in accidents causing injury[10]; a similar limit imposed in Northern Ireland in 1956 was followed by a 24% reduction in such accidents.[11] A 40 m.p.h. limit applied during the late 1950s to some main roads in the London area formerly without a speed limit brought a reduction of 20% in accidents causing injury,[12] and a similar limit adopted in Jersey in 1959 reduced fatal