drinkers 16 and 8, alcoholics 39 and 21 (social drinkers 4.1 and 2.4 mmol/l/h, non-drinkers 3.5 and 1.7, alcoholics 8.5 and 4.6).^{5,6} But probably these values do not apply to all groups in the community. Back calculation along these extremes of slope gives the range of blood alcohol concentration at the time of the accident that might have led to the measured value. This range can be narrowed by adjusting for the person's weight, build, age, sex, and body fat.

Even with several timed blood specimens, however, the standard slope still has to be used because present assays are not precise enough to calculate accurately the person's own slope.^{4,7} There are also serious constraints on the timings between which the back projections can be made. These arise because the blood alcohol concentration is not predictable when absorption is still occurring⁸ and because the slope departs appreciably from linearity at low alcohol concentrations. When some 30 g of alcohol is drunk over a short period (5 minutes) on an empty stomach the blood concentration rises quickly to produce a peak between 30 and 60 minutes; then the concentration declines in a near linear fashion for about four hours. When the concentration approaches 20 mg/100 ml (4.3 mmol/l) the curve becomes non-linear and back extrapolation is invalid. If the same quantity of alcohol is taken slowly and with food the blood concentration rises less sharply to a more rounded peak and gradually turns into a linear downward slope after about three hours as the rate of absorption falls below the removal rate. During this absorption phase the blood alcohol concentration may be much lower than when the alcohol is drunk rapidly, and it is not valid to extrapolate back into this absorption phase from the subsequent linear slope. When alcohol has been drunk after an accident ("the hip flask defence") attempts to allow for this require either an estimate or "calibration" of the person with alcohol,⁹ but this calibration may be invalid if measurements are delayed for many weeks or months.

Where it can be verified that a motorist of normal physique has not had alcohol in the previous two to three hours then determination of the blood alcohol concentration by back calculation in the following two to three hours would provide a range of concentrations—albeit with wide confidence intervals—that are likely to be right. Additional evidence—for instance, that the person did not take food with the drink, on the amount drunk, and on when it was drunk—will extend the valid "window" to an earlier time. But even with extra evidence it is difficult to be confident of blood alcohol concentrations in the hour after drinking—and this is the time when most accidents are likely to have happened.

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Radiological diagnosis of deep vein thrombosis

The clinical evaluation of deep vein thrombosis is very inaccurate. Some two thirds of thromboses in the legs cause no symptoms and half the diagnoses made on clinical grounds alone will be wrong.¹ Hence it is important to evaluate the other methods of diagnosis.

Venography of the legs remains the gold standard against which all other methods have to be judged. The introduction of low osmolar contrast media has greatly reduced the upsets caused by venography,^{2,3} but a search has also been made for methods which are less invasive and avoid the use of x rays. Both impedance plethysmography and Doppler ultrasonography are highly sensitive in diagnosing occlusive deep vein thrombosis in the iliac and femoral veins but are much less so in detecting thrombosis in the lower leg as well as the potentially dangerous proximal non-occlusive thrombosis.^{4,5} "Duplex" ultrasonic scanning—that is, the combination of pulsed Doppler and real time B mode imaging—requires expensive equipment and has not been evaluated in patients with suspected deep vein thrombosis. Radionuclide imaging using fibrinogen labelled with iodine-125 requires at least 24-48 hours before a diagnosis can be made and cannot be used in pregnant or lactating women; it is sensitive in detecting thrombi in the calf but less so in the proximal veins.⁶ Technetium-99m has been tagged to fibrinogen and other blood products,⁷ but imaging using these combinations has not been as accurate as venography.

Recently real time B mode ultrasound scanning, usually with a 7.5 MHz transducer, has been evaluated for confirming or excluding deep vein thrombosis. It is quick, it uses standard equipment that is available in most x ray departments, and many radiologists are skilled in ultrasonic scanning. The results from different centres have been remarkably consistent: a specificity of 89-94% and a sensitivity of 100%.⁸⁻¹¹ The visualisation of thrombus is the most specific diagnostic criterion.⁸ Acute and chronic thrombi can often be distinguished by ultrasound: typically the latter are highly echogenic,¹² and the former are not.¹³ Finding clot floating free in the lumen of the vein is further evidence of recent thrombosis,⁸ and compressibility of the vein by the ultrasound pulse is another sensitive and reproducible indicator.^{11,13} The common femoral vein may fail to distend in response to the Valsalva manoeuvre in iliofemoral venous occlusion.¹⁴ Venous compression should distinguish the slow moving echoes which arise in the lumen from venous stasis caused by thrombosis higher in the vein, cardiac failure, or ischaemia of the leg.¹⁵

Real time scanning of the venous system cannot show up the calf veins (except occasionally for their proximal portions) and the iliac veins.¹¹ Another blind area on ultrasonography is the popliteal-femoral segment in the region of the adductor opening.¹⁰ Nevertheless, most workers consider that thrombi limited to the calf veins are unlikely to give rise to embolism,¹⁶ and they often resolve within 72 hours without anticoagulant treatment.¹⁷

So what conclusions can we reach about the roles of ultrasonography and venography in practice? Given a radiologist skilled in ultrasonography, this method is an accurate way of excluding or confirming thrombus in the femoro-popliteal segment. When a radiologist does not have this skill venography of the leg remains a first line investigation for suspected thrombosis there and in the iliac veins. An

additional advantage of ultrasound is that it may show conditions that mimic deep vein thrombosis, such as haematoma, abscess,¹⁸ and ruptured Baker's cyst.¹⁰

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Walking through labour

The horizontal position, either supine or lateral, is often claimed to have been devised by the modern obstetrician to allow him easier access to the perineum, but traditional birth attendants in primitive tribes have for centuries nursed women horizontally. In Europe Francois Mauriceau advocated a supine position for delivery but an upright posture in labour as early as the seventeenth century,¹ and similar advice was proffered by William Smellie² some 50 years later. Since then many reports on posture in labour have been published—and they have been well reviewed recently by Lupe and Gross.³

Most obstetricians allow a woman to adopt any position she wants during labour. They might constrain walking when continuous fetal heart rate monitoring is needed or when the woman has ruptured her membranes in early labour. As we become more familiar with the benefits and limitations of fetal heart monitoring many obstetricians are selecting fewer women for continuous recording throughout labour. The obstetrician could allow walking during labour even in a woman he wished to monitor by using the cheap

radiotelemetry that allows freedom from attachments to the cardiotocograph machine. The concern about walking after the membranes have ruptured arises because of the risk of the umbilical cord prolapsing ahead of the presenting part. Usually, however, the head presents, and if it is engaged the risk of a prolapsed cord is greatly reduced.

The supine position should be avoided at any stage of labour. The hazards of supine hypotension, particularly among those women receiving epidural anaesthesia, are well documented.⁴ Further, both Turnbull⁵ and Caldeyro-Barcia *et al*⁶ have claimed that the lateral position is better for uterine action than the supine position. Several groups have claimed that standing and walking not only shorten labour but also ease the discomfort of the mother.⁷⁻⁹ Labour in the vertical position, on the other hand, is associated with increases in contraction intensity but not with contraction frequency,^{8,10} increases in total uterine activity, and higher resting intra-uterine pressures.¹¹ Read *et al*¹¹ have suggested that the upright posture may be as effective as oxytocin for augmenting an inefficient labour.

Others argue that walking is a consequence not the cause of an easy labour.¹²⁻¹⁵ What is clear is that many of these studies are deficient in design and size. Although women in all but one study were ostensibly randomised into alternate postures, randomisation was often poor. Further, the sample size in the biggest study was 370 women and in four of the surveys was less than 100. Uncontrolled periods of walking and inexact definitions of labour further complicated the picture.

Walking thus does not increase the risk to mother or fetus, but does it lead to any benefits? We need a rigorously performed randomised controlled trial of walking against bed rest in the first stage of labour to determine any precise benefit from either position. Until this is done women should be able to follow their instincts.

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