It should be remembered that deaths from pre-eclampsia nearly equal those from eclampsia[29]: it is not the convulsions that make this condition so dangerous. Eclampsia is conventionally considered to be the end stage of the disorder, but this is an oversimplification. Some patients have only minor systemic disturbances and the problem is easy to control with rapid recovery after delivery. Other patients are desperately ill with progressive renal failure, disseminated intravascular coagulation, microangiopathic haemolysis, and liver dysfunction. Thus convulsions are a marker for severe illness but not a reliable one. Some patients with pre-eclampsia are more dangerously ill than others with eclampsia. Often too much effort is spent in giving treatment to pre-eclamptic women to prevent convulsions (in circumstances where eclampsia is unlikely) and too little in determining the extent and severity of the illness, so that those with severe systemic disturbances can be selected for urgent delivery.

In addition many doctors do not appreciate the chameleon-like nature of this extraordinary condition. The fulminating illness may begin with headaches and vomiting that can easily but dangerously be discounted as "viral gastroenteritis." Jaundice is a rare presentation[30] and is often misinterpreted by specialists. The severity (and therefore dangers) of a pre-eclamptic illness are never reliably shown by a single measurement. It is conventional to equate the degree of hypertension with the extent of the problem. Although this is true in general, there are enough exceptions to make this a dangerous assumption. There is increasing evidence for "normotensive" pre-eclampsia,[31] a condition characterised by intrauterine growth retardation and maternal problems that may include disturbances of clotting and hepatic function.[32-34]

Some rules of thumb are helpful for those trying to cope with this disease in the frontline. Firstly, no consultation with a pregnant woman is complete without a blood pressure measurement and a check for proteinuria. Those with blood pressures of 140/90 mm Hg or more and proteinuria of 1+ or more on dipstick examination should be considered to have advanced disease and admitted to hospital on the same day. Those who are also feeling ill need to be admitted by flying squad. Any pregnant woman suffering from headaches and vomiting in the second half of pregnancy should be assumed to have terminal pre-eclampsia until proved otherwise. In hospital specialist assessment of any case of suspected pre-eclampsia is incomplete without knowing a patient's renal function (measurements of plasma urea and creatinine are good enough), platelet count, and hepatic function (plasma aspartate aminotransferase activity). These investigations need to be constantly available, and all but the last are already provided by most emergency laboratory services. As pre-eclampsia is an unstable condition that may change dramatically regular reassessments are essential. Cure depends on elective delivery.

It is time that doctors took a new look at this major problem of obstetric care. All cases of eclampsia occurring in Britain should be reviewed regularly to provide an analysis and overview of what is happening. With their well established tradition of audit, all obstetricians would surely want to assist such an endeavour, which should lead to better prevention and management.

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Estimating with confidence

The *BMJ* now expects scientific papers submitted to it to contain confidence intervals when appropriate.[1] It also wants a reduced emphasis on the presentation of P values from hypothesis testing.[2] The *Lancet*,[3,4] the *Medical Journal of Australia*,[5] and the *American Journal of Public Health*[6] have implemented the same policy, and it has been endorsed by the International Committee of Medical Journal Editors.[7] One of the blocks to implementing the policy has been that the methods needed to calculate confidence intervals are not readily available in most statistical textbooks. Today the *BMJ* continues a series of articles that aims at filling that gap (p 1238); they will eventually be published as a book. Further articles in the *American Journal of Public Health* and the *Annals of Internal Medicine* have debated the uses of confidence intervals and hypothesis tests and discussed the interpretation of confidence intervals.[8-14]

Statistical analysis of medical studies is based on the key idea that we make observations on a sample of subjects and then draw inferences about the population of all such subjects from which the sample is drawn. If the study sample is not representative of the population we may well be misled and statistical procedures cannot help. But even a well designed study can give only an idea of the answer sought because of random variation in the sample. Thus results from a single sample are subject to statistical uncertainty, which is strongly related to the size of the sample. Examples of the statistical analysis of sample data would be calculating the difference between the proportions of patients improving on two treatment regimens or the slope of the regression line relating two variables. These quantities will be imprecise estimates of the values in the overall population, but fortunately the imprecision can itself be estimated and incorporated into the presentation of findings. Presenting study findings directly on the scale of original measurement, together with information on the inherent imprecision due to sampling variability, has distinct advantages over just giving P values usually dichotomised into "significant" or "non-significant." This is the rationale for using confidence intervals.

The main purpose of confidence intervals is to indicate the (im)precision of the sample study estimates as population values. Consider the following points for example: a difference of 20% between the percentages improving in two groups of 80 patients having treatments A and B was reported, with a 95% confidence interval of 6% to 34%.[2] Firstly, a possible difference in treatment effectiveness of less than 6% or of more than 34% is not excluded by such values being outside the confidence interval—they are simply less likely than those inside the confidence interval. Secondly, the middle half of the confidence interval (13% to 27%) is more likely to contain the population value than the extreme two quarters (6% to 13% and 27% to 34%)—in fact the middle half forms a 67% confidence interval. Thirdly, regardless of the width of the confidence interval, the sample estimate is the best indicator of the population value—in this case a 20% difference in treatment response.

So when should confidence intervals be calculated and presented? Essentially confidence intervals become relevant whenever an inference is to be made from the study results to the wider world. Such an inference will relate to summary not individual characteristics—for example, rates, differences in medians, regression coefficients, etc. The calculated interval will give us a range of values within which we can have a chosen confidence of it containing the population value. The most usual degree of confidence presented is 95%, but any suggestion to standardise on 95%[3,4] would not seem desirable.[15]

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Adrenal and nigral transplants for Parkinson's disease

The spectacular benefits of levodopa and its analogues in Parkinson's disease are limited by waning of therapeutic efficacy and by the development of on off swings, dyskinesias, and mental symptoms.[1,2] Research has sought other approaches, and in 1981 in Sweden attempts were made to transplant the patient's own adrenal medulla (autografts) into the caudate nucleus in the hope that this would bypass immunological rejection and provide an added source of endogenous dopamine.[3] The benefits in four patients were slight and transitory. This work showed, however, that the operation was possible—the adrenal catecholaminergic tissue took on its new blood supply and to some extent reinnervated the receptor site.

More publicity was given to the extension of this work in younger patients in Mexico[4]: two of the 12 patients treated died within six months—but from unrelated causes. Benefit was claimed for rigidity, akinesia, and tremor, but improvement was variable and was delayed from three to 10 months and in some cases for more than a year. There was no controlled series, and the florid publicity in the national press led to sceptical criticism among neuroscientists in the United States. Isolated reports of similar procedures in North America have confirmed the soundness of this cautious reception; the results have been controversial.

The technique consisted of transplanting a piece of adrenal autograft into the head of the caudate nucleus adjacent to the lateral ventricle, where it is close to the vascular choroid plexus and is bathed in cerebrospinal fluid: from here the graft disperses the catecholamines throughout the central nervous system. It is too early to assess these results because of small numbers, short follow up, and the absence of controls.

Other methods have been attempted, notably transplanting the fetal substantia nigra. In rats that have had their striatum destroyed solid grafts or suspensions implanted in the caudate putamen sprout axons and form extensive new synaptic pathways. They restore 10-50% of striatal dopamine, and its turnover and receptor sensitivity are restored.[5] These are substantial theoretical advantages. The operation has been technically achieved in a few cases, notably in two patients from Birmingham a couple of weeks ago. Benefit cannot be claimed at such an early stage, though the interest stimulated may encourage other workers to collaborate in a controlled investigation. Fetal nigral material has to be obtained when the fetus is about 8 to 12 weeks old. It is