Correspondence. Books

These data corroborate those of Chiverton and colleagues, and, in our opinion, this processing method should be used routinely, at least when dealing with 24 hour gastric acidity studies on anti-secretory drugs.

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References

1 Chiverton SG, Burget DW, Hunt RH. Do H$_2$ receptors antagonists have to be given at night? A study of the anti-secretory profile of SKF 94482, a new H$_2$ receptor antagonist which has a profound effect on daytime acidity. Gut 1989; 30: 594–9.

Reply

SIR,—We should like to thank Drs Mela and Savarino for their kind comments which relate to the methods which we used for the analysis of pH data, and they raise several important points. The collection of pH data, whether obtained by aspiration at hourly intervals and measured ex vivo, or by continuous recording at six second intervals by intragastric pH electrode, provides more pH data than should be used in an analysis of overall acidity. This requires that a summary variable be calculated across time for each subject studied. This summary variable should provide a physiologically relevant measure of gastric acidity, and is not to be confused with the statistical concept of ‘central tendency’. Furthermore, as total exposure to acid concentration is likely to be of greatest physiological consequence, any attempt to use statistics to compensate for non-normal distribution of raw pH data over time, may well obscure important fluctuations in intragastric pH. Drs Mela and Savarino have drawn attention to our observation that the means of pH across time appear to be normally distributed. It is worth emphasising that this refers to the distribution of the summary variable itself and not the underlying raw pH data. They are quite correct that skewness and kurtosis estimates require much larger sample sizes, but this is a practical impossibility in a single study.

We have also compared the mean and median as summaries of pH over time in a prospective series of six studies with 25 treatment arms, and involving a total of 296 individual 24 hour studies. Our results show that while the mean and median are highly correlated, the relationship is not linear, with the median significantly skewed to lower pH (p<0.00001). The median 24 hour pH showed a greater skew in 20 of the 25 treatment arms, a higher variance in 21 of 25 treatment arms, and greater heterogeneity of variance in five of the six studies. These characteristics of the median result in a decreased sensitivity for detecting differences among drugs in all of the six studies. These results therefore confirm, in a prospective study, that the mean is a more robust summary of pH changes over time than is the median.

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Books

The use of confidence intervals in the presentation of data derived from clinical research is now required ‘when appropriate’ by a number of journals. This book is a compilation of articles, written for the British Medical Journal, that is intended as guidance and assistance for research workers with the new statistical orthodoxy. As one in need of guidance, I had two expectations from this book. First, a clear exposition of the benefits of confidence intervals, and second, an easily comprehensible demonstration of the methodology.

On the first point, I was looking for firm evidence that this shift in opinion does not merely represent the hijacking of the research community by a group of trendy statisticians, but I found myself not much the wiser. Certainly I agree that the abolition of the plus or minus sign for standard errors or deviation would be helpful because this sign is not usually found on computer keyboards and is not a standard
The logical basis of the argument is not clear, and the worked examples add little to the argument, and do not seem to simplify the calculation. In comparison with Siegel's classic on *Non-parametric statistics*, which uses worked examples to explain the logic of the argument (or for that matter other statistical classics, such as Snedcor and Tukey) this book is neither particularly convincing nor very helpful; the worked examples are no more than the substitution of numbers for symbols in the various equations.

A computer software disk* supplied to me did not greatly improve matters; while it allows one to calculate confidence intervals either from data given in the book or from personal data, it does not allow the data to be saved or transferred from another source, and it is only a device for calculation, not explanation. In extenuation, I should point that this was a test disk and possibly not identical with the version to be published.

If the use of confidence intervals diminishes erroneous inferences from data then, presumably, the literature is replete with such errors. But is it? There is no clear evidence on this point put forward by the authors. Have reviewers in the past allowed the publication of ambiguous statistics and will this henceforth cease? Again, there is no clear message. Am I an old fogy who simply resents the introduction of new methods? Perhaps.

Nevertheless, if the method had not been already imposed by editorial edict, I wonder whether this book would have won many converts. I doubt it.

DAVID WINGATE

*The CIA disk which accompanies the book is available at a full price of £65 in the 5" or 3.5" format.


In his preface, the editor outlines the aim of the book: to provide an assessment of the management options in terms of current optimal therapy. Some of the chapters provide guidance about the interpretation and treatment of symptoms and symptom complexes, including haemorrhage from the upper and lower alimentary tract; functional dyspepsia; constipation and chronic diarrhoea; traveller's diarrhoea; malabsorption and jaundice. Other chapters review the management of specific diseases such as oesophageal disorders; peptic ulceration; diseases of the gall bladder; ulcerative colitis; Crohn's disease; pancreatitis; pancreatic cancer; viral hepatitis; chronic liver disease; and the problems of immuno-compromised individuals. In addition, there are chapters on the management of the sequelae of disease processes (such as fistulae) and also of the consequences of operative interference with the viscera of the alimentary tract. Further chapters outline the interpretation of abnormal liver function tests; the value of screening for alimentary cancers; and the use of enteral and parenteral nutrition.

The book achieves its objectives and can therefore be regarded as a success. There are, of course, some omissions and one can differ from some of the views and recommendations. For example, starting at the beginning, the section on oesophageal diseases does not mention the importance of avoiding food and