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Injecting drug use in Australia: needle/syringe programs prove their worth, but hepatitis C still on the increase

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TO THE EDITOR: Law and Batey¹ rely on a flawed study for their conclusion that needle/syringe programs (NSPs) have saved lives and money.

The study in question² compared the incidence of HIV and hepatitis C virus (HCV) infections in cities round the world and concluded that cities with NSPs had achieved reductions in HIV incidence that were not seen in cities without NSPs. However, interestingly, no similar reduction in HCV incidence was reported.

Detailed reading of the study shows that a third of the cities (22/67) without

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IN REPLY: Copeman's criticism of the report *Return on investment in needle and syringe programs in Australia*¹ is essentially that the comparison of the effectiveness of needle/syringe programs (NSPs) is confounded by other factors. This point, and its implications for the results, was extensively discussed in that report. Copeman suggests that the estimated reduction in HIV due to NSPs might largely be attributable to the inclusion of data from many cities in Thailand that do not have NSPs. This criticism is not supported by the data. A sensitivity analysis including only cities from developed countries was performed at the time of the report (see Methods, Section 3.1.2, page 13¹), but was not included among the

Statistical methods in clinical trials

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TO THE EDITOR: GebSKI and Keech describe with clarity and accuracy the important basic concepts of statistical analysis for physicians.¹ I would like to draw attention to two issues.

Firstly, the authors refer to common measurement scales that are used in medicine. It is crucial to understand the limits of a measurement to begin to appreciate results from any study. They describe the continuous scale and offer blood pressure and temperature measurements as examples. This scale refers to data determined such that the distance between any two points is known and measurable. Siegel used the term "ratio scale" if there was a true zero point to the measurement.² This contrasts to an ordinal categorical scale, in which the intervals are not constant. The scale referred to can be transformed, and is anchored with respect to

the measurements to some reproducible point. The term "ratio" for this scale seems preferable, as the world is, in essence, discrete when measured, in the quantum sense. Certainly, the measured world is not continuous, at least as far as we can determine it.

Secondly, the authors do not mention resampling methods.³ These can be very powerful and are attractive in biomedical research when the distribution may not be defined. While I realise these methods are relatively new, they do seem unreasonably ignored in undergraduate medical education.

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IN REPLY: While one can view the world as being "discrete", the assumptions underpinning most common statistical methods in analysis of clinical studies are "continuous" distributions. In fact, statisticians go to enormous lengths to approximate discrete systems as continuous ones (lifetime analysis, normal approximations, etc).

The measurement scale by which study outcomes are assessed needs careful consideration (to ensure consistent precision and units of measurement). However, both practical and statistical considerations allow for the more common definitions of continuous and discrete measurements to be just as effective for statistical comparisons. Indeed, there is frequently little loss of statistical efficiency when "continuous" variables are appropriately categorised into ordinal groups.¹

Resampling methods randomly sample the data repeatedly to estimate the underlying population distribution parameters (eg, mean, standard deviation, etc). They can be very useful in solving specific problems in which the underlying properties of the data used to make treatment comparisons are unknown and using other statistical approximations is deemed to be inappropriate. However, these are special-

ised computer-intensive techniques for use by trained biostatisticians, rather than commonly used analysis methods. Problems arise with resampling techniques (eg, obtaining confidence intervals), which require specialised statistical expertise.

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The "omnipotent" Science Citation Index Impact Factor

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TO THE EDITOR: I read with interest the article in the Journal on ranking medical journals and the fallacies to be found therein.¹

I have a simpler method. I subscribe to two classes of journals: those specialising in psychiatry, and more general journals. The psychiatry journals I keep entire. However, as my house is of modest size I cannot do that with the general journals, so I tear out and file the articles that I find interesting and informative. You will be interested to know that in the past month I have filed away one article from the *Lancet*, one from the *New England Journal of Medicine* and three from the *Medical Journal of Australia*. What better measure of merit could there be?

1. Lundberg GD. The "omnipotent" Science Citation Index Impact Factor. *Med J Aust* 2003; 178: 253-254. □

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