Population Attributable Risks And Fractions: Neglected Measures Of Effective In Veterinary Epidemiology

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Abstract

Epidemiology textbooks and the majority of courses in epidemiology delivered at the undergraduate (and even postgraduate) level focus on prevalence ratios, incidence risk ratios and odds ratios as the primary means for quantifying the association between exposures and a given outcome[1]. In veterinary epidemiology at least, this has led to ratio estimates being the most common means by which association strength is reported.

Ratio measures are not so useful for the task many of us are asked to address: to provide an estimate of the likely reduction in outcome frequency if a given preventative measure is implemented at the population level. Population attributable risks (PARs) and population attributable fractions (PAFs), on the other hand, are eminently suited for this purpose.

This talk provides a review of PARs and PAFs and how they might be used to address the health, productivity and behaviour issues in livestock populations, including: (1) a visual approach to show and understand how PARs and PAFs are calculated and interpreted; (2) an explanation of how PARs and PAFs might be used when the objective of an investigation centres around causal inference; (3) analytical procedures available to adjust PARs and PAFs for known confounders[2]; and (4) methods for presenting and explaining PARs and PAFs to decision makers. Examples are provided from recent project work to illustrate how we have used PARs and PAFs to address real-world animal health problems.

[231 words]

1. Olsen J, Greene N, Saracci R, Trichopoulos D (2015) Teaching Epidemiology: A Guide for Teachers in Epidemiology, Public Health and Clinical Medicine. Oxford University Press London.

2. Rockhill B, Newman B, Weinberg C (1998) Use and misuse of population attributable fractions. American Journal of Public Health 88: 15 - 19.