

Science and Style: A Study Of Medical Practice Variation Among General Practitioners

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Abstract

This study investigates the patterns of medical practice variation among New Zealand general practitioners (GPs) in their management of accident related back pain. The outcomes which are studied are whether or not cases of back pain are referred for physiotherapy, specialist assessment, radiology, or have earnings related compensation approved. The study analyses data from 129,079 claims for accident related back pain throughout New Zealand which were initiated in the 1998 calendar year.

The literature on medical practice variation and small area is reviewed. It is argued that negative definitions of variation based upon unexplained residual phenomena are inadequate, and that positive definitions based upon clinical decision making are a sounder basis for studying medical practice variation.

For each of the four outcomes, a simulation based upon random numbers is used to generate a null hypothesis of no variation, under which all GPs refer at the same underlying rate. Then, using a mixed model applied iteratively within SAS, the variance components in referral to each of the four outcomes are estimated at two levels of clustering: among 2,679 GPs and among 21 District Health Board areas (DHBs).

The raw data showed substantial differences in referral rates between individual GPs, and between DHBs. Simulation confirmed that medical practice variation did exist,

with observed distributions of GP referral rates being significantly different from the simulated null distributions. GPs with very low caseloads often appear to refer at extremely high and low levels, even if their underlying referral rate does not diverge from the average. This result is adequately explained by the binomial distribution for a small number of trials.

The variance of GPs in referral to each of the four outcomes was higher than the variance among DHBs. Variances for GPs within DHBs showed no correlation with the level of referral to any of the four outcomes at the 5% level. Variances of GPs within DHBs for each of the four outcomes only rarely showed significant correlation with each other at the 5% level.

This study shows that the pattern of variability tends to be the same within the geographic areas of DHBs as it is on a national scale. It shows that the caseload of a GP is an important factor which must be considered in measuring the referral rate of that GP, and it finds that the degree of variability observed in referral to each of the four outcomes is not easily reconciled to uncertainty or ambiguity in guidelines for referral. This study demonstrates the application of simulation techniques to analyse variation at the level of individual practitioner, and proposes some directions in which such analysis could be further developed.

The results of this study suggest that health funding agencies should take a cautious approach to modifying the practice of extremely high or low referrers. Extreme levels of referral among GPs are, under some circumstances, expected by chance. Distinctive patterns of variation among individual GPs do not explain variation at the level of DHB area.