

Increasing Immunisation Coverage in the Absence of Data: Modelling Geographic Risk of Under-Immunisation.

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Abstract

Immunisation is a key component of the New Zealand Health Strategy, which has the stated goal of 95% national coverage level in the pre-school population by 2004. An immediate barrier to achieving such a goal is the absence of a coverage monitoring database that enables either current the estimate of immunisation rates at a national level or areas of under-immunisation at a more local level. Existing evidence suggests that coverage in the pre-school population still falls some way short of this level, furthermore, some groups have been identified as being of higher risk of under-immunisation. The Immunisation Targeting Index (ITI) is a means of more effectively targeting these at-risk populations. The ITI is an instrument that examines ecological differences in risk of under-immunisation at a neighbourhood (Census Area Unit) level, thereby providing a tool for community level as well as national immunisation programmes. ITI combines information from demographic, health service, and disease databases in an additive model providing geographic dimensions to known population risk factors. Results from the ITI demonstrated considerable regional variation at a variety of scales. Nearly 80% of the higher-risk areas occurred in the wider Auckland region. While the patterns of higher-risk areas were similar to measures of ecological deprivation, deprivation alone was an inadequate predictor of such areas. The ITI provides an example of how simple, timely GIS analyses can assist in the planning and delivery of public health programmes.