

Submitted to Biomedicine International – awaiting decision.

A regular series of unexpected increases in total deaths for residents of Scottish Local Authority areas: Is an infectious source implicated?

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Key Words: Time series, deaths, mortality, morbidity, Scotland, step-like change, infectious outbreaks, cytomegalovirus

Abstract

Background

The trends in death within the UK show evidence for extended periods of higher than expected deaths. This study investigates the detail of these trends in Scotland.

Objective

To study the trend in deaths for residents of Scottish Local Authority (LA) areas and seek to identify a recurring series of step-like increases in death.

Methods

A running 12 month sum of deaths was constructed for each Scottish Local Authority over the period Jan-91 to Dec-13. Successive blocks of 12 month deaths were compared each side of a given date to detect step-like increases in deaths which endure for a period of 12 or more months.

Results

Deaths in each LA is marked by a regular series of step-like increases in mortality. Total deaths typically increase by around 6% to 16%, although higher increases of 36% and 42% were seen in the Shetland and Orkney Islands respectively during one of these events in in 2002. The maximum increase in deaths declines with increasing size and follows a Power Law function. These unexpected increases are clustered in time but appear to show spatial spread between LAs. Other studies indicate that these events appear to initiate periods of higher emergency department attendance, medical admissions and GP referral.

Conclusions

These events may be evidence for the existence of a new type of disease entity. There are implications to the monitoring of deaths and mortality rates between areas and countries, most importantly that the unique spatiotemporal spread can lead to these events being obscured in larger aggregates such as whole country.