PREDICTING CLINICALLY DIAGNOSED DYSENTERY INCIDENCE OBTAINED FROM MONTHLY CASE REPORTING BASED ON METEOROLOGICAL VARIABLES IN DALIAN, LIAONING PROVINCE, CHINA, 2005-2011 USING A DEVELOPED MODEL

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Abstract. This study describes our development of a model to predict the incidence of clinically diagnosed dysentery in Dalian, Liaoning Province, China, using time series analysis. The model was developed using the seasonal autoregressive integrated moving average (SARIMA). Spearman correlation analysis was conducted to explore the relationship between meteorological variables and the incidence of clinically diagnosed dysentery. The meteorological variables which significantly correlated with the incidence of clinically diagnosed dysentery were then used as covariables in the model, which incorporated the monthly incidence of clinically diagnosed dysentery from 2005 to 2010 in Dalian. After model development, a simulation was conducted for the year 2011 and the results of this prediction were compared with the real observed values. The model performed best when the temperature data for the preceding month was used to predict clinically diagnosed dysentery during the following month. The developed model was effective and reliable in predicting the incidence of clinically diagnosed dysentery for most but not all months, and may be a useful tool for dysentery disease control and prevention, but further studies are needed to fine tune the model.

Keywords: dysentery, predicting model, meteorological variable

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