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<p>Tiivistelmä-Referat-Abstract</p> <p>Community-acquired pneumonia (CAP) is a severe disease and a major cause of death worldwide especially among the elderly. The most common causative pathogen is <i>Streptococcus pneumoniae</i>, pneumococcus. The diagnosis of pneumococcal pneumonia is difficult because there is no gold standard, a diagnostic test that would identify all cases and yet be definite.</p> <p>National Public Health Institute has launched a Finnish Community-Acquired Pneumonia study investigating the frequency and causes of CAP among the elderly aged 65 years and above. Sputum, urine, blood and nasopharyngeal swab samples are collected from the subjects enrolled in the study and a large number of microbiological assays are performed on samples. One of the main objectives is to find a case definition for pneumococcal pneumonia in the elderly. For this purpose, the accuracy of diagnostic tests performed in the study need to be evaluated. In the absence of gold standard, the true disease status of the subjects is latent and the sensitivities and the specificities of the tests cannot be estimated using conventional methods.</p> <p>The aim of this thesis is to estimate the sensitivities and the specificities of diagnostic tests and estimate the prevalence of pneumococcal pneumonia among the elderly population in Finland using latent class analysis. The method is applied to data collected in the Finnish Community-Acquired Pneumonia study. Methodological issues in latent class analysis are discussed. In addition, a function for estimating the model parameters using statistical program R is presented.</p> <p>The main sources are:</p> <p>Agresti, Alan 2002: <i>Categorical Data Analysis</i>. Wiley. New York.</p> <p>Hagenaars, Jacques A. 1990: <i>Categorical Longitudinal Data</i>. Sage Publication. London</p> <p>Formann, A. - Kohlmann, T. 1996: Latent class analysis in medical research. <i>Statistical Methods in Medical Research</i>, 5, 179-211.</p>		
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