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CRISS-CROSS MODEL OF TUBERCULOSIS FOR HOMELESS AND NON-HOMELESS SUBPOPULATIONS

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ABSTRACT

We consider a criss-cross model describing tuberculosis epidemic dynamics. The case in study considers Warmian-Masurian province of Poland and is related to actions of active detecting of tuberculosis in homeless people subpopulation. The model was published in [1]. In the model the population is divided into subpopulations of non-homeless and homeless people. Each of the subpopulation consists of two groups – susceptible and infected people. The analysis of model will be presented. The most important property of the model is related to its Malthusian origin. This means that in general the size of the whole population (meaning homeless and non=homeless together) grows unboundedly or the population goes to extinction. It can also happen (like in [1] that the subpopulation of non-homeless people goes to extinction while the subpopulation of homeless people grows unbondeldy, which seems to be absurd. Therefore, we propose a modification of this model.

REFERENCES

[1] Siemaszko A. Romaszko J. Bodzioch M. Buciński A. Doboszyńska A.: *Active case finding among homeless people as a mean of reducing the incidence of pulmonary tuberculosis in general population*, Advances in Experimental Medicine and Biology - Neuroscience and Respiraton (2016).