

Spread of Measles Disease in Indonesia with Susceptible Vaccinated Infected Recovered Model

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Abstract : Measles is a disease which can spread caused by a virus and has been a priority's Ministry of Health in Indonesia to be solved. Each infected person can be recovered and get immunity so that the spread of the disease can be constructed with susceptible infected recovered (SIR). To prevent the spread of measles transmission, the Ministry of Health holds vaccinations program. The aims of the research are to derive susceptible vaccinated infected recovered (SVIR) model, to determine the patterns of disease spread with SVIR model, and also to apply the SVIR model on the spread of measles in Indonesia. Based on the article, it can be concluded that the spread model of measles with vaccinations, that is SVIR model. It is a first-order differential equation system. The patterns of disease spread is determined by solution of the model. Based on that model Indonesia will be a measles-free nation in 2186 with the average of vaccinations scope about 88% and the average score of vaccinations failure about 4.9%. If it is simulated as Ministry of Health new programs with the average of vaccinations scope about 95% and the average score of vaccinations failure about 3%, then Indonesia will be a measles-free nation in 2184. Even with the average of vaccinations scope about 100% and no failure of vaccinations, Indonesia will be a measles-free nation in 2183. Indonesia's target as a measles-free nation in 2020 has not been reached.

Keywords : measles, vaccination, susceptible infected recovered (SIR), susceptible vaccinated infected recovered (SVIR)

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