Prediction modelling based on INMAS modified SEIR Model

Institute of Nuclear medicine and Allied sciences has developed modified version of Susceptible Exposed Infectious Recovered (SEIR) model to assess the effectiveness of the of various measures since the outbreak. The INMAS modified SEIR model introduces muti-timelined partitioned approach to deal with the times series data containing various levels of social distancing measures. This allows the estimation of Covid 19's measures such as protection rate, infection rate, average incubation time, average quarantine time, and mortality rate separately. The model was deployed for prediction of the Covid 19 trend on 5 Apr 2020.

Performance of predicting Total, Active, Recovered and Death cases of Covid 19:

The model takes the time series data from the official MoHFA web site as the input parameters. It takes the total infection, total active, total recovered and total death cases as input parameters. The model provided detail prediction report since 5 Apr 2020. The variation in predicted total infection, total death and basic reproduction number (Rt) is very less and average accuracy has been more than 98.5% since the beginning of Covid 19 epidemic in India. The model has the ability to estimate the impact of epidemic spread on different age group populations. This is very useful in predicting the safety mechanism to be employed for every age groups in our society.

Application for civil society:

The model is perfectly capable of handling the prediction of any other pandemic in the future. It can be deployed to the civil health organisations and allow them to feed the data on daily basis for them to understand their local health situations. The model also can be integrated with ministry of health and family affairs and ICMR database and provide them various data mining features to understand the current situation of the health status in the country. The model also enables the users to vary various pandemic parameters such as protection rate, infection rate, average incubation time, average quarantine time, and mortality rate and estimate the future spread of the pandemic. This will be very useful to the health professionals to be prepared for any adverse events in the future.

The model has been developed within existing facilities of INMAS, and hence does not require any additional funding. The deployment of existing model to any other organisation requires a maximum of week time after the basic information about their hosting platform is informed to INMAS.