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Global dynamics of a compartmental model to assess the effect of transmission from deceased

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During several epidemics, transmission from deceased people significantly contributed to disease spread, but mathematical analysis of this transmission has not been seen in literature numerously. Transmission of Ebola during traditional burials was the most well-known example, however, there are several other diseases such as hepatitis, plague or Nipah virus that can potentially be transmitted from disease victims. This is especially true in the case of serious epidemics when healthcare is overwhelmed and the operative capacity of the health sector is diminished, such as it could be seen during the COVID-19 pandemic. We present a compartmental model for the spread of a disease with an imperfect vaccine available, also considering transmission from deceased infected in general. The global dynamics of the system are completely described by constructing appropriate Lyapunov functions. We perform numerical simulations to assess the importance of transmission from the deceased considering the data collected from three infectious disease Ebola virus disease, COVID-19, and Nipah fever to support our analytical results. Joint work with Saumen Barua.