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Measles: Need for continued vaccination and novel vaccines post virus eradication

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Measles virus (MV) is the only human virus within the Morbillivirus genus of the Paramyxoviridae. The virus can cause severe complications such as measles giant cell pneumonia and acute post measles encephalitis. More rarely fatal infections of the CNS, sub-acute sclerosing panencephalitis (SSPE) and in immunosuppressed individuals' measles inclusion body encephalitis (MIBE) occur. The World Health Organization (WHO) has set goals towards the complete eradication of MV in at least five WHO regions by 2020. This presents potential problems as the closely related veterinary members in the genus share common cell entry receptors raising the risk of zonotic infection. MV is thought to have evolved from the now eradicated cattle Morbillivirus, rinderpest and to have entered the human population during cattle domestication. Lessons have also been learned from other animal to human virus transmission i.e., human immunodeficiency virus (HIV) and more recently avian influenza, severe acute respiratory syndrome (SARS) and Middle Eastern Respiratory Syndrome (MERS). This highlights the potential consequences of complete withdrawal of MV vaccination after eradication. The measles vaccine is live attenuated and has very low risk of reversion but is still unlikely to be acceptable in a MV free world raising the need for alternative approaches. A formalin fixed MV vaccine was used for a period in the 1960's but provided short lived and non-complete immunity with an altered immune response and death of some children following later infection. This has encouraged research into recombinant vaccines for MV using other virus vector systems which will be discussed.

Biography

S Louise Cosby was appointed as the Head of Virology Branch at the Agri-Food and Biosciences Institute, UK, in 2015. She was the Chair of Microbiology in Queen's University Belfast from 2002 and remains an Emeritus Professor. She is a Fellow of Royal College of Pathologists, London and Fellow of the Royal Society of Biology, UK. She currently serves on Grant/Editorial Boards of BBSRC, UK, is a Member of Science Foundation Ireland, Deputy Chair Professional of Development Committee, Microbiology Society, UK, Associate Editor of *Journal of Neurovirology*, USA, Review Editor of *Frontiers in Microbiology*, External Assessor for Appointments and Promotions in Medical Microbiology, University of Malaysia.

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