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Measles vaccination: Threat from related veterinary viruses and need for continued vaccination post measles eradication

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, subacute sclerosing panencephalitis (SSPE) and in immunosuppressed individual's 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 raising the risk of zoonotic 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. This may present presents problems as the closely related veterinary members in the genus share common cell entry receptors. Therefore, novel cross reacting vaccines will be required. The current 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 and the closely related veterinary viruses using other virus vector systems. The potential for zoonotic infection and approached to vaccination will be discussed.

Speaker Biography

S Louise Cosby was appointed as Head of Virology Branch at the Agri-Food and Biosciences institute, UK in 2015. She was 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 has served/currently serves on grant/editorial boards: BBSRC, UK; Chair/member, Science Foundation Ireland; Deputy Chair Professional Development Committee, Microbiology Society, UK; Associate Editor, *Journal of Neurovirology*, USA; Review Editor, Frontiers in Microbiology; External Assessor for Appointments and Promotions in Medical Microbiology, University of Malaysia. Her research interests are in virus pathogenesis including virus-receptor interactions, virus-induced immunosuppression and vaccine development. Her work has focused on paramyxoviruses of both human and veterinary interest, with publications/grant funding in this area.

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