

World Congress on Infectious Diseases

August 10-12, 2015 London, UK



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Novel technologies and innovations for prevention and treatment of “Infectious diseases” including EBOLA

Introduction: It is impossible to protect whole nations from the effects of bioterrorism by preventive vaccination. There are too many possible agents, the costs would be exorbitantly high, and the health risks associated with complex mass vaccination programs would be unacceptable for the public health authorities. Adequate protection, however, could be provided via a combination of rapid detection and diagnosis with proper treatment for those exposed to biological weapon agents. Preferably this should be done with therapeutics, which would be beneficial in all stages of infection to disease.

Methodology: Immunoglobulins and/or monoclonal antibodies, preferably from human origin, can be used to prevent severe complications by neutralizing or blocking the pathological elements of biological agents and these are the optimal candidates to be deployed in case of biological warfare or a bioterrorist event. Also for natural outbreaks, like the recent and still ongoing Ebola Virus Disease (EVD) outbreak in West Africa, the use of human antibodies against the virus have shown to be effective. These antibodies were given as immunoglobulin obtained from the plasma from survivors of the EVD or as isolated antibodies from human EBV survivors, which are multiplied in human cell culture processes.

Discussion: As an example of the latter technology recent research in aerosol challenged rabbits has shown that the application of a combination of a human monoclonal antibody against the protective antigen (PA) and one against the lethal factor (LF) of the anthrax toxin is highly efficacious even when given 48 hours after the exposure of animals to anthrax spores.

Conclusion: Having an effective diagnostic system and an effective therapy, one can choose therapy above vaccination for biological threats, which have a low prevalence.

Biography

Stef Stienstra is a Strategic and creative consultant in biomedical science, with a parallel career as a Commander of the reserve of the Royal Dutch Navy. For the Dutch Armed Forces he has responsibility for the counter measures in CBRNe threats and (medical) consequence management both in a military and a civilian (terrorism) setting. He is strategic functional specialist for “Health & Environment” of the 1-Civil-Military-Interaction Command (1-CMI) of the Dutch Armed Forces and for 2015 also in the NATO Response Force (NRF), which is in 2015 the responsibility of the 1-German-Netherlands-Corps (1-GNC). He was the director of the 2014 World Congress of CBRNe Science & Consequence Management in Tbilisi, Georgia.

In his civil career he works internationally as consultant or as scientific supervisory board member for several medical and biotech companies, merely involved in biodefense. He is also visiting professor for Punjab University in Pakistan and Rhein-Waal University in Germany.

He has finished his studies in Medicine and in Biochemistry at the University of Groningen in The Netherlands and has extensive practical experience in cell biology, immuno-haematology, biodefense and transfusion medicine. His natural business acumen and negotiation competence helps to initiate new successful businesses, often created out of unexpected combinations of technologies. His good understanding of abstract science combined with excellent skills in the communication of scientific matters to non-specialists, helps him with strategic consulting at top level management.

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