Stef Stienstra, J Infect Dis Ther 2017, 5:3 (Suppl)
DOI: 10.4172/2332-0877-C1-025

Stef Stienstra

Royal Dutch Armed Forces, Netherlands

Managing bio-threat information under the WHO international health regulations of biosecurity

Sharing security threat information is a challenge for governments and their agencies. Especially in biotechnology and microbiology the agencies do not know how to classify or to disclose collected information on potential bio-threats. There is vague border between man-made and natural biological threats. An example is the several month delay of the publication of research on the transmissibility of H5N1 avian influenza virus in the leading scientific journal Science by researchers of the Erasmus Medical Centre in Rotterdam, The Netherlands. The publication was delayed in 2012 by several months due to the fact that various organizations first wanted to investigate whether the details could be misused by malicious individuals. In the study the researchers show that only a small number of mutations were necessary to change the H5N1 virus so that it can spread through the respiratory system between mammals. This implies that the risk of a H5N1 pandemic cannot be ruled out. On the other hand, this information can be used to develop new therapies and/or vaccines for influenza. It gives also insight into the disease mechanism, which helps in the prevention. The same arguments are valid for therapeutic antibodies, like the antibodies, which are developed to treat anthrax. They have an extreme high affinity for the lethal factors of the bacterium and stop the disease, but the same antibodies could be misused to select the most pathogenic strains. Micro-organisms have from nature itself the capacity to reorganise and change their pathogenicity, which could lead to a pandemic spread of a disease. But if the disease is too infectious and too deadly, like some stains of Ebola Virus are, the lethality will be locally limited. But if the incubation time is longer in a certain strain of an Ebola virus, the risks on epidemics and even a pandemic is much higher. The knowledge of these natural mutation mechanisms could be misused to weaponize micro-organisms. It enables the engineering of the lethality like it is done with some anthrax strains. Are these laboratory techniques considered as public science or should it be classified? Academics want to publish and to share information for the progress of science and to find useful applications. The Rotterdam scientists were really annoyed when their research was blocked for publication and feared that other groups would be first in publishing a part of their obtained experimental results. Biosafety is already common practice in micro-biology, but biosecurity is often still questionable. A 'Code of Conduct', like the Dutch Academy of Science has developed, would help; especially for the so-called insider risk. Educational programs for the identification and assessment of risks and threats to security have to be developed to give scientists bio-threat awareness and for government officials to rationalize the real threat, without damaging the progress of science.

Biography

Stef Stienstra works internationally for several medical and biotech companies as Scientific Advisory Board Member and is also an active Reserve-Officer of the Royal Dutch Navy in his rank as Commander (OF4). For the Dutch Armed Forces, he is CBRNe Specialist with focus on (micro) biological and chemical threats and Medical- And Environmental Functional Specialist within the 1st CMI (Civil Military Interaction) Battalion of the Dutch Armed Forces. For Expertise France, he is now managing an EU CBRN CoE public health project in West Africa. In his civilian position, he is at this moment developing with MT-Derm in Berlin (Germany) a novel interdermal vaccination technology as well as a new therapy for cutaneous leishmaniasis for which he has won a Canadian Grand Challenge grant. With Hemanua in Dublin (Ireland), he has developed an innovative blood separation unit, which is also suitable to produce convalescent plasma for Ebola virus disease therapy. He has finished both his studies in Medicine and in Biochemistry in the Netherlands with a Doctorate and has extensive practical experience in cell biology, immuno-haematology, infectious diseases, biodefense and transfusion medicine.

Stef.Stienstra@inter.nl.net