

Bioterrorism in the air – a cause for alarm?

By Paulo Magalhães Alves MD

The suicide of microbiologist Bruce Ivins, a scientist suspected of orchestrating the anthrax attacks in the US shortly after 9-11, re-opened some worrying memories for the aviation industry worldwide.

Anthrax pulmonary infection, a lethal disease if not readily suspected and treated, killed five people after letters containing anthrax spores were mailed to several news media offices and two US senators in 2001. Seventeen other people were infected in the same way but were successfully treated for either the inhalational form, or the less severe dermatological form, of anthrax. These events put the subject of bioterrorism firmly in the public spotlight.

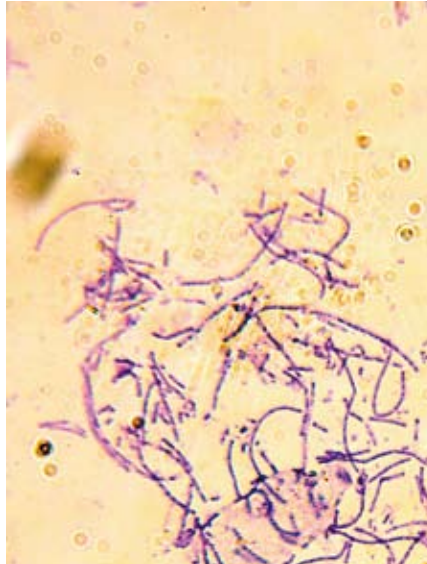
An established threat

Bioterrorism is not a new concept. Dead, rotting animals were used in ancient Roman times to poison enemy water supplies and, in 1984, Salmonella was used in India to incapacitate the voting population during an election period.

So, we must ask: “Is bioterrorism a serious threat to today’s air passengers?” Based on the number of times a white powdery material was found on board airlines from all nations – and suspected to be anthrax – in the early 2000s, one would think the answer is: “Yes.”

A closer look reveals, however, that none of those cases proved to be anthrax. The false alarms nonetheless revealed just how under-prepared airlines – and other safety systems – were to deal with bioterrorism threats. Time-consuming anthrax testing methods were just one deficit airlines faced, causing costly flight scheduling disruptions.

Today, we know much more about bioagents and the psychology behind such attacks that aim to cause illness or death to people, animals or plants through the release of infectious agents. Most of these agents exist in nature but might eventually be modified to resist conventional available therapy or spread quickly into the environment.



Acts of bioterrorism through the disease anthrax, caused by the bacterium bacillus anthracis (pictured), led to five deaths in the US shortly after 9-11.

Laboratory refinement

Anthrax, smallpox, botulinum toxin, plague, haemorrhagic viruses (such as Marburg and Ebola) and tularaemia are members of the most feared category of bioweapons, combining high public health impact with the potential for large-scale dissemination.

Manipulating these organisms, however, is not an easy task and requires a high level of biosafety only achieved in very few, highly-specialised laboratories where occupational protection exists. To be lethal, anthrax powder must be extremely fine to be carried by air and into the lungs. Very few laboratories around the world can achieve this level of refinement. Coarser anthrax powders, however, can still lead to the less-dangerous cutaneous form of the disease resulting from skin contact.

Airlines and the public have also learned what anthrax scientists knew before 9-11, which is that anthrax powders are brownish in colour, not white.

Although the real risk of a bioterrorist attack against aviation today is difficult to assess, airlines do now have a better

understanding of anthrax and, more generally, of disease transmission within the cabin environment, as well as the preventive mechanisms in place to minimise such transmission.

A review of the World Health Organization’s International Health Regulations (IHR) – scheduled even before the 9-11 attacks occurred – was accelerated because of this new international health threat. Changes to the IHR after 9-11, regulating communication about international public health concerns, included new, compulsory notification between countries for every condition carrying the potential of international spread. Whether a common infectious disease or even a manipulated biological agent used as a bioweapon, all threatening incidents had to be reported and investigated. Previously, only suspected cases of cholera, plague and yellow fever were to be reported.

So, is bioterrorism a possibility in the air? The answer depends on many variables, beginning with the ability of terrorists to successfully develop, manipulate, store and release those agents.

Without doubt, as a result of the many advances in knowledge, awareness and international cooperation, particularly since 9-11, airlines are much better prepared today to deal with the intentional or unintentional spread of disease agents. ■

As the vice president of medical services with MedAire, Dr Paulo Magalhães Alves assists with medical case reviews, staff training, medical industry presentations and client support. He is a cardiologist and the former medical director for Varig in Brazil.

The **Regional** International Medical Advisory is provided courtesy of ERA member MedAire Ltd.