

Talk

Prevention of infections by antibiotic-resistant bacteria in the population with chronic respiratory disease



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ABSTRACT

The Anti-Microbial Resistance (AMR) crisis has been already recognized as the most grave public health crisis. The GRAM paper published in February 2022 at The Lancet showed that in 2019, the previous year to the Covid-19 pandemic, 5 million people died because of an infection produced by an antibiotic-resistant bacteria. Humans are colonized by bacteria. Under certain occasions, the equilibrium between the immune system and the bacteria is broken, favoring infections of mucosal tissues like lungs or the bladder, or infections of soft tissues, and furthermore, invasive infections leading to death. In the last 100 years, we have been curing people being infected with antibiotics. However, the bacterial strains circulating today have high levels of antibiotic-resistance. Antibiotics are failing. And there is not a major alternative to them. Vaxdyn is a company headquartered in Seville and working with an international network of collaborators for development of vaccines to prevent infections produced by the most worrisome antibiotic-resistant bacteria. The company was founded as a spin-off of the Institute of Biomedicine of Seville in 2011. Vaxdyn has developed a proprietary technology, protected by patent, able to deliver effective and safe vaccine candidates able to create immunity against very conserved bacterial outer-membrane proteins. The aim is to refocus the immunity of the vaccinated subject for neutralizing infections and sparing the need for using antibiotics. The lead candidate of Vaxdyn is a vaccine aimed for people with moderate-severe chronic obstructive pulmonary disease (COPD) in order to prevent exacerbations of the disease caused by infections with antibiotic-resistant *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*, and to prevent pneumonia produced by *Acinetobacter baumannii*. All by vaccination with a single product. Development of this candidate is supported by the international accelerator CARB-X, funded by The Bill & Melinda Gates Foundation, The Wellcome Trust and others. The vaccine candidate has shown the ability to neutralize infections by all the target pathogens in murine models and has also shown feasibility for manufacturing at mass-scale. In the talk, apart from discussing the technology and results, the clinical plans, and how a vaccine candidate can be developed from Seville will be also discussed.

REFERENCES

Murray, CJL et al. (2022). Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis. The Lancet 399: 629-655; DOI: [https://doi.org/10.1016/S0140-6736\(21\)02724-0](https://doi.org/10.1016/S0140-6736(21)02724-0)