**Antimicrobial resistance**

**Antimicrobial resistance and the burden**

One of the current major global health problems is the increasing microbial resistance to antibiotics, antiviral medicines, antifungals, among others. The burden of antimicrobial resistance (AMR) is large. An estimated 25,000 people infected with multidrug-resistant bacteria die each year in the EU (EMA, 2016). Infections caused by these multi-resistant bacteria in the EU lead to additional healthcare costs of at least EUR 1.5 billion per year, and loss of productivity (EMA, 2016). In the USA yearly at least 2 million people are infected with resistant bacteria (EMA, 2016). It is expected that the burden of the problem will increase exponentially, if no appropriate measures are taken. By 2050 worldwide more than 10 million people will die each year. The economic cost will also be significant, with the world economy being hit by up to $100 trillion (O’Neill, 2016).

**Policies to control AMR**

Worldwide strategies to control AMR and its consequences (mortality, costs) are being developed, focussing on: improving awareness and understanding of antimicrobial resistance by means of communication, education and training; strengthening knowledge through surveillance and research; reducing the incidence of infection; optimizing the appropriate use of antimicrobial agents; and developing the economic case for sustainable investment that takes account of the needs of all countries, and increases investment in new medicines, diagnostic tools, vaccines and other interventions (EC, 2016; WHO, 2016). Currently these strategies appear to be insufficient, as for example demonstrated in the unchanged European consumption rates of antibiotics during the years 2011 - 2014 (Smith, 2016). One of the current focus of policies is to reduce antibiotics prescription and antibiotics consumption by means of stimulating appropriate use of antibiotics and by finding alternatives for antibiotics (NICE, 2015; O’Neill, 2016).

**AM prevention and treatment strategies**

In daily clinical practice AM promotes a health promotion oriented lifestyle and treats patients with the aim to support and strengthen the self-healing or self-regulating ability of the human organism to cope with diseases (e.g., restricted use of antibiotics and antipyretics in infections, use of alternative treatments with natural medicinal products and non-medicinal treatments (e.g., external embrocation and compresses)). As a result of this approach, it is hypothesized that the organism in general will become less vulnerable for infections (prevention) and more resourceful/resilient in overcoming occurring infections. According to the experience of expert AM professionals this approach is effective and safe, and results in lower antibiotic prescription and consumption.

**Is the AM contribution evidence-based?**

Currently AM preventive and treatment strategies are partly based on AM concepts and long-term (more than 90 years) clinical experience developed in clinical practice treating patients. There is a small but increasing amount of evidence from in-vitro studies, observational studies and randomized controlled trials demonstrating lower antibiotic prescription rates by AM doctors, positive client experiences with prevention and treatment, and safety and efficacy of treatment (Jeschke, 2007; Baars, 2016 Hamre, 2005; Koster et al., 2014). Currently an international research consortium of conventional and CAM (Complementary & Alternative Medicine) researchers is executing AMR
research projects and is developing strategies to increase the body of evidence on the contribution of (C)AM.

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Links to some articles

https://www.hindawi.com/journals/ecam/2014/243801/
http://cognition-based-medicine.eu/Abstract/PDFs/HH05_1.pdf
http://downloads.hindawi.com/journals/ecam/aip/3642659.pdf
https://www.hindawi.com/journals/ecam/2015/521584/

Links to some current projects

Appropriate use of antibiotics: the role of CAM treatment strategies
http://www.bristol.ac.uk/primaryhealthcare/researchthemes/atafuti.html
http://www.southampton.ac.uk/namrip/research/pharmacology-and-therapeutics/pelargonium-trials.page

References


In-vitro studies


• Roser, E. (2015). Investigating the antimicrobial potential of selected Anthroposophic medications which were promising in the screening (Doctorate thesis)


**Clinical studies**


**Reviews**

• Baars EW et al. (2016). *Scoping review to explore the contribution of anthroposophic medicine to the reduction of antimicrobial resistance. Background, expertise, evidence and projects*. Oestrich-Winkel/Driebergen: Sustainable Business Institute/Louis Bolk Institute.

• Eurocam (2015). The role of Complementary and Alternative Medicine (CAM) in reducing the problem of antimicrobial resistance.


**Prescription studies**


**Lifestyle studies**


Other supportive studies