The Academies recommend establishing a round table to discuss antibiotic resistances and new antibiotics. The academies are calling for immediate action to intensify interdisciplinary research and collaboration between universities and scientific institutions. The Academies recommend establishing a round table to discuss antibiotic resistances and new antibiotics under the umbrella of the Academies of Sciences and Humanities with the participation of the German Centre for Infection Research DZIF. As independent institutions, together with the relevant stakeholders from science, politics, public authorities and industry, the Academies provide a framework to inform about problems and suggest solutions in a timely fashion. The task of the round table could be to define topics, the need for action and the research agenda for current developments.

The German National Academy of Sciences Leopoldina

The German National Academy of Sciences Leopoldina brings together the expertise of some 5,000 distinguished scientists to bear on questions of social and political relevance, publishing unbiased and timely scientific opinion. The Leopoldina represents the German scientific community in international committees and pursues the advancement of science for the benefit of humankind and for a better future.

The Academy of Sciences and Humanities in Hamburg

The Academy of Sciences and Humanities in Hamburg was founded in 2004. Members of the Academy are scholars of all academic disciplines from northern Germany. One of its goals is to intensify interdisciplinary research and collaboration between universities and scientific institutions. The Academy provides a framework to inform about problems and suggest solutions in a timely fashion. The task of the round table could be to define topics, the need for action and the research agenda for current developments.

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In addition, the academies also propose a research agenda. Research activities should cover a wide range of topics and methods in order to approach the problems of antimicrobial resistance from different angles and to enable the widest possible approach to the search for new active agents. The opinion piece also addresses in detail the various requirements of pharmaceutical product development.

Recommendation 1: Improved basic research

A broad range of basic research is required in order to establish new lead structures and to develop new active agents. The academies also propose a research agenda. Research activities should cover a wide range of topics and methods in order to approach the problems of antimicrobial resistance from different angles and to enable the widest possible approach to the search for new active agents. The opinion piece also addresses in detail the various requirements of pharmaceutical product development.

Recommendation 3: Facilitation for clinical research

Clinical studies on the duration of effective antibiotic therapies, on the use of different therapy regimens and on the effect of the development of resistance should be increased and funded. Transformation of new active agents into a central role in the introduction of new active agents in clinical use and should also receive more funding. Trials initiated by independent scientists at universities or non-university institutions (Investigator-Initiated Trials – IIT) should be examined faster and in a less complicated manner and possibly approved and supported by public funding.

Recommendation 4: Further development of regulatory framework conditions

Due to the development of the described resistances, the proof of the superiority of new antibiotics versus currently used substances is too high a treatment aim. Instead, multiple substances with a similar efficacy should be available. It should be taken into account that the future development of resistance is unpredictable and that individually rare risks could arise (for example, allergies, drug interactions). In future, a certificate of efficacy should be sufficient as the treatment aim for approval of new therapy principles and new substance classes in particular.

Recommendation 5: Restriction of antibiotics use in veterinary medicine and plant protection

Antibiotics should, if possible, only be allowed for targeted use after clinical diagnosis and based on the results of resistance tests. It must be ensured that the pathogens are controlled is of national control. Antibiotics should be used only if prescribed by a veterinary. Animal pathogenic bacteria and zoonotic agents should be monitored continuously. The containment of antimicrobial resistance should be promoted. With the change of the German Infectious Diseases Protection Act in 2014, the Robert Koch Institute is responsible for the reduction of nosocomial infections and prevention of infections. Their development and implementation should therefore be promoted consistently. The effects of measures should be documented and checked more intensely through monitoring activities. Epidemiological studies and investigations into the transfer of resistance genes should accompany the monitoring activities.

Recommendation 6: Consistent implementation of surveillance and antibiotic consumption records and reduction as well as promotion of education

Regular surveillance of the resistance rates of important pathogens should be carried out on all levels: locally to globally and across the hospital, outpatient and animal husbandry sectors. The data should be published annually. On the one side, this kind of data acquisition requires the cooperation of the parties involved on all levels. On the other side, standardised and uniform test systems and limits for diagnostic laboratories should be defined and introduced. In addition to pathogens, commensal bacteria should be monitored continuously. Treatment recommendations for the clinical and outpatient area should be continued and made widely available on the basis of the collected resistance information in particular for the Commission for Anti-Infecctives, Resistance and Therapy (ART) at the Robert Koch Institute.

The academies welcome the approach of the German Antimicrobial Resistance Strategy (DART). With the change of the German Infectious Diseases Protection Act in the summer of 2013, necessary measures were to use antibiotics more rationally and prevent infections diseases. These measures should be continued and contribute to the reduction of nosocomial infections and prevention of infections. Their development and implementation should therefore be promoted consistently. The effects of measures should be documented and checked more intensely through monitoring activities. Epidemiological studies and investigations into the transfer of resistance genes should accompany the monitoring activities.

In addition, the academies also propose a research agenda. Research activities should cover a wide range of topics and methods in order to approach the problems of antimicrobial resistance from different angles and to enable the widest possible approach to the search for new active agents. The opinion piece also addresses in detail the various research requirements.

The academies give the following recommendations: