**Introduction:**
Multidrug resistant bacteria (MDR) are an increasing problem on intensive care units. Lung infections caused by *Acinetobacter baumannii* are frequently difficult to treat. Phages have regained attention as treatment option for bacterial infections due to their specificity and effectivity in lysis. The aim of this preclinical study was to determine efficacy and safety of a novel phage preparation in mice.

**Methods:**
Mice were transnasally infected with a MDR *A. baumannii* strain [1] and 12 hours later treated intratracheally with a specific phage or solvent. Phage Acibel004 [2] was produced as suspension including efficient depletion of endotoxins. At defined time points, clinical parameters, bacterial burden in lung and bronchoalveolar lavage fluid (BALF) and cell influx were determined. Further, lung permeability and cytokine release were quantified and histopathological examination was performed.

**Results:**
Mice treated with phages recovered faster from infection-associated hypothermia. 48 hours after infection, phage treatment led to a reduction in bacterial loads in lungs and BALF. In addition, lung permeability and cytokine production were reduced in phage-treated mice. Histopathological examination of the lungs showed less spreading of bacteria to the periphery in phage-treated mice, whereas cellular recruitment into the lung was unaffected. No adverse effects were observed.

**Conclusion:**
For the first time a highly purified phage against *A. baumannii* was successfully used in vivo. The current preclinical data support the concept of a phage-based therapy against pulmonary *A. baumannii* infections.

**References:**