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## **Acquisition risk of atypically resistant or multidrug-resistant pathogens on subtropical and tropical deployments – the German experience**

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**Background:** The German Armed Forces are increasingly involved in multinational deployments in subtropical and tropical settings. Since 2006, the Department of Tropical Medicine at the Bernhard-Nocht Institute, German Armed Forces, offers diagnostic screenings for returnees. In recent years, several studies have focused on the prevalence of atypically resistant or even multi-drug resistant bacteria which colonize or infect patients in tropical settings. Here we assessed the occurrence of colonizing multi-drug resistant bacteria in stool samples of soldiers returning from various deployments with emphasis on Gram-negative bacteria as typical colonizers of the gut.

**Material/methods:** Beginning with the very first samples from 2006, stool samples were subjected to non-specific enrichment in thioglycolate broth at 37°C for 16-24 hours. Subsequently, the samples were cultured on chromogenic Brilliance ESBL (extended spectrum beta-lactamase) selective agar (Oxoid, Basingstoke, UK) at 37°C for another 16 to 24 hours. Selected ESBL-genes were detected by PCR and Sanger sequencing.

**Results:** Since 2006, a mission-dependent, steady increase in colonization with ESBL-positive Enterobacteriaceae from less than 1 % to 25 % could be observed. While only few strains per several hundred samples could be isolated during the first years of the assessment, considerably higher percentages were detected in the later years. E.g., one out of four soldiers was colonized during a recent deployment in Western African Mali, with *bla*<sub>CTX-M</sub> group I genes homogeneously accounting for the resistance phenotype.

**Conclusions:** The increasing colonization with ESBL-positive Enterobacteriaceae after tropical deployment constitutes a considerable problem for hygiene and poses a challenge to prevention of infections. Although such colonization is usually harmless for healthy young soldiers, there are risks of transmission to ill or even immune-compromised family members and of endogenous infections in case of trauma or severe diseases. Decolonization of the colonized gut is not reliably possible so far, so screening and counseling seems advisable.