and evaluate intervention to reduce HAIs risk. Here we describe results of the multimodal surveillance system implemented in the ICU of a large teaching hospital in Rome from April 2016 to October 2018.

**Methods:**

The surveillance system integrated four different approaches: i) active surveillance focused on inpatients; ii) environmental microbiological surveillance; iii) surveillance focused on isolated microorganisms; iv) behavioral surveillance of the healthcare personnel. The system included the molecular genotyping of bacterial isolates through the pulsed field gel electrophoresis (PFGE). Moreover, an intervention to improve personnel adherence to hand hygiene (HH) guidelines was conducted.

**Results:**

Overall, 773 patients were included in the surveillance. The global incidence rate of the device related HAIs was 14.1 (95%CI: 12.2-16.3) per 1000 patient day. Monthly device related HAIs incidence rate showed a decreasing, from 26.9 per 1000 patient day in October 2016, to 4.9 in September 2018. The most common bacterial isolate was K. pneumoniae (20.7%), the 94.0% of which were multidrug-resistant. A total of 305 environmental bacterial isolates were retrieved and the most frequent was A. baumannii (27.2%), that was always multidrug-resistant. Genotyping showed a limited number of major PFGE patters in clinical and environmental isolates. Behavioral compliance to HH guidelines improved after the educational intervention.

**Conclusions:**

The data showed an overall slight decrease over time of the adjusted risk HAIs rates. Through the integration of information gathered from the four approaches, the application of this model returns a precise and detailed view of the infectious risk and of the microbial ecology of the ICU.

**Key messages:**

- Multimodal surveillance systems are effective to monitor HAI incidence and to determine the infectious risk.
- Genotyping techniques allows to characterize and link the clinical and environmental isolates.

## Multimodal Surveillance of HAI in an Intensive Care Unit of a Large Teaching Hospital

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**Background:**

Healthcare associated Infections (HAIs) represent a significant burden in terms of mortality, morbidity, length of stay and costs for patients in intensive care units (ICU). Surveillance systems are recommended to gather data in order to elaborate