Introduction:
Complicated intra-abdominal infections (cIAIs) remain a common cause of morbidity and mortality among ICU patients and therapeutic failure still occurs. This study aimed to assess the clinical impact of an initial inappropriate empirical therapy of cIAIs.

Methods:
This retrospective study enrolled patients admitted to the ICU of the Fondaz. Pol. A. Gemelli in Rome, between February 2010 and February 2017 with a diagnosis of in-hospital cIAI. Comparisons between patients receiving initial inappropriate antimicrobial therapy (IIAT) and initial appropriate antimicrobial therapy (IAAT) were performed.

Results:
A total of 137 patients were included (IIAT=44 and IAAT=93). Baseline characteristics were comparable, with the exception of SOFA score at infection which was higher in IAAT (p=0.04). Secondary peritonitis was the main type of cIAI (45.5% in IIAT and 40.9% in IAAT) followed by abdominal abscess and biliary tract infection. Secondary bacteraemia was significantly higher in IIAT (p=0.03). Conversely, IAAT had an higher rate of adequate source control (p=0.01). Empirical therapy of IAAT patients included more frequently anti gram-positive (p=0.016) and carbapenems (p=0.01), while empirical dual anti gram negative and antifungal coverages rate were not different (Fig. 1a). MDR and polimicrobial infections rate was significantly higher in IIAT when associated with septic shock at occurrence of infection (p=0.03; Fig. 1b). IAAT showed significantly lower mortality at 28 and 90 days (p<0.01) as well as higher rate of clinical cure and microbiological eradication than IIAT (p<0.01). At the multivariate analysis, adequate source control [p=0.04, OR 0.25 (0.09-0.65)] and IIAT [(p<0.01, OR 11.4 (4.02-32.3)] turned out to be independently related with 28 days mortality.

Conclusion:
In cIAIs an appropriate empirical antibiotic therapy and an early infection source control are closely associated with better outcomes.
Fig. 1b