Introduction:
DEXPED evaluated the impact of a prolonged exposure (≥ 24 hours) to dexmedetomidine on the duration of invasive mechanical ventilation (IMV), length of PICU and hospital stay and use of other sedative agents.

Methods:
DEXPED is a retrospective cohort study that included patients aged 0 to 18 years, admitted to the PICU of the Montreal Children’s Hospital between November 1st 2011 and April 25th 2015, requiring IMV and sedative agents for ≥ 48 hours. Patients exposed to dexmedetomidine during IMV (n=53) were compared to non exposed patients (n=159) using a propensity score analysis (1:3 ratio).

Results:
Dexmedetomidine was administered at doses ranging from 0.2 to 2 mcg/kg/hour for a median duration of 67 hours (IQR [40.5;98]). The median duration of IMV was 161 hours (IQR [110-257]) in the exposed group and 116 hours (IQR [89.3-206]) in the non exposed group. The use of dexmedetomidine was associated with a smaller short-term probability of extubation (HR 0.67, 95%CI [0.47-0.96]; p=0.04). Patients who received dexmedetomidine were more likely to remain in the PICU (HR 0.62, 95%CI [0.42-0.92]; p=0.03) in any short time interval, as well as in the hospital (HR 0.56, 95%CI [0.35-0.88]; p=0.02), and received more opioids and benzodiazepines. However, a secondary analysis redefining exposure as initiation of dexmedetomidine within the first 48 hours from intubation suggested that exposure was associated with a greater short-term probability of extubation, although this study was not powered to perform this analysis.

Conclusion:
Dexmedetomidine was associated with a longer duration of IMV. However, the association was inversed when patients received dexmedetomidine as a primary sedative agent. It is uncertain whether this difference of associations is due to immortal time bias or clinical features. Timing of initiation of dexmedetomidine in relationship to other sedatives may impact patient outcomes and should be considered in the planning of future trials.