In Italy children are followed by pediatricians provided by the National Health Service free of charge and children with T1DM are managed in 100 centers (68%) with local registries: 26 from tertiary referral centers (66.6%) and 17 from primary/secondary referral centers (58.6%) (p<0.001). Pediatric Intensive Care Unit was present in only 28/68 centers (41%). In 10 tertiary referral centers (14%), DKA was managed by a pediatric diabetologist, in 45 centers (66%) by general pediatrician + pediatric diabetologist (by phone) and 13 centers (19%), all primary/secondary referral, by general pediatrician alone. Serum beta-hydroxybutyrate to rate DKA severity and to evaluate DKA management follow-up was measured in 43/68 centers (63%).

In the 2 years of the survey, a total of 2453 children 0-14 years of age were newly diagnosed and DKA observed in 945/2453 patients (38.5%), severe in 253/2453 (10.3%). Evaluating DKA occurrence and tertiary vs primary/secondary referral centers, no difference was observed either for total DKA (35.5% vs 38.9%, p=0.562), or severe DKA (44% vs 10.2%, p=0.893). In preschool children, total DKA was observed in 445/618 patients (72%) (p<0.001 vs patients >6 years of age), and severe DKA in 103/618 patients (17%) (p<0.001 vs patients >6 years of age). Cerebral edema was observed in 5/945 patients (0.53%).

All 68 centers declared to manage DKA according written protocols: 46 centers (68%) used IDF/ISPAD guidelines, 15 centers used a protocol based on Lestradet indications, or slightly modified respect the one utilized during the IMDIAB study, called GETREM and 7 centers (10%) used local protocols not necessarily referring to any international recommendation.

Insulin
Insulin was infused using an automated syringe in 53 centers (76) starting from 2nd or 3rd hour in all 68 centers. Insulin infusion rate was 0.05-0.1 U/kg/h in 49 centers (72%), while the remaining centres used lower rates (0.02-0.07 U/kg/h).

Conclusions
Notwithstanding prevention campaign and pediatric care, DKA is still observed at diabetes onset in Italian children. Despite international guidelines significant variability in DKA treatment still exists, underlying the need to share them among pediatric centres. Furthermore, most of the Italian centers treating children with DKA do not have an ICU in their hospital, do not measure serum beta-hydroxybutyrate and do not infuse insulin with an automated syringe. In our country cerebral edema is a rare complication of DKA in children with newly diagnosed diabetes.