hours. Physiologic parameters were monitored and pain scores assessed.

**Results**

The median fentanyl concentrations were 0.18, 0.15, 0.15 and 0.57, 0.37, 0.35ng/mL at 15–31 minutes, two and four hours and the half-lives were 1.6 to 20.5 or 4.1 to 32.6 hours for the low and high dose groups, respectively. A significant correlation was seen between weight at study inclusion and half-life (Spearman’s r = 0.6, p < 0.001), volume of distribution (r = -0.8, p < 0.01) and clearance (r = -0.9, p < 0.01) in the low dose group (n=9). Pain assessment results were not correlated to pharmacokinetic variables. Fentanyl was well tolerated.

**Conclusion**

The inter-individual variation of fentanyl pharmacokinetics is large in preterm infants and the dose of 0.5 mg/kg seems too small for skin-breaking procedures.

**Disclosure(s)**

Nothing to disclose

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**A COMBINED EXPERIMENTAL APPROACH TO ASSESS INTESTINAL DRUG ABSORPTION IN EARLY CHILDHOOD**

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**Background**

Drug transporters and metabolizing enzymes located in the epithelial lining of the intestine limit or enhance systemic drug exposure. During childhood, the abundance and activity of these transporters and enzymes - determining how fast and how much of a drug is being absorbed into the circulation - changes from birth to adolescence. As most drugs given to children are taken by mouth, the aim of this project is to study the abundance and activity of transporters and metabolizing enzymes, involved in the intestinal absorption of drugs.

**Methods**

The *ex vivo* Ussing chamber with pediatric small intestinal tissue is applied to evaluate intestinal drug absorption and metabolism. Transport and metabolism of a selection of drug molecules is assessed across these tissues by sampling the donor and receiver compartment at different intervals and sample analysis by LC-MS/MS. Viability, functionality and integrity of the tissues are monitored using electrophysiological parameters (dP, R, I). Ussing chamber experiments are combined with a targeted proteomics approach to quantify drug transporter and metabolizing enzyme abundance in these tissues.

**Results**

An Using chamber method has been successfully set up using both adult and pediatric intestinal tissue. To date samples from three children of different ages have been evaluated and show promising results. Tissue from the same patients has been stored for proteomics analysis.

**Conclusion**

The Using method presents an innovative, feasible approach to study active intestinal transport in children. Further studies are now underway to elucidate age-related variation in intestinal transport and metabolism.