Intravenous anesthesia with propofol can be done with TCI or manual infusion. TCI devices are expensive, making their use less accessible, namely to less wealthy countries. Roberts introduced a practice scheme for propofol infusion using a manual pump, designed to perform induction and achieve steady state concentrations.

The goal of our study was to develop a new scheme to be used on manual infusions, allowing individualization of a patient’s requirement for propofol at induction as well as the achievement of an adequate steady state concentration for the initial maintenance phase.

Patients subjected to general anesthesia for neurosurgical procedures were studied. Anesthesia was induced with 1% propofol at 200ml/h, infused with a Fresenius Base Primea TCI pump set to “TCI View” mode. Loss of consciousness (LOC) was assessed by lack of response to name calling and tapping on the forehead. At the moment of LOC the estimated propofol effect site concentration (Schnider Pk model) was noted. Following LOC, the pump was switched to TCI mode, the target effect site concentration set according to a previously published formula [1].

**Of-line Analysis**

- Relation between propofol infused volumes and time during which the infusion stopped after LOC.
- Propofol doses, weight, and age of the patients were used to develop a scheme to be used manually, achieving after LOC similar concentrations to those observed in patients.
- Ce’s were simulated using the new proposed scheme and compared with the calculations obtained by applying Roberts’ scheme to the data from our patients.

**RESULTS AND DISCUSSION**

- Data collected from 11 patients (69±18kg, 167±11cm and 50±16years).
- A relation was found between infusion rate (mg/kg/min) and induction total volume (ml/kg), Figure 1.
- No relation was found between interruption time and induction dose (average interruption dose of 170s).
- Real and simulated Ce’s are presented in Table 1 with respective mean error.

**Proposed Scheme**

- Induction with propofol at 3,3ml/kg/h until LOC
- Propofol interruption for 170 s
- Restart propofol infusion at infusion rate estimated by eq. of figure 1

**Figure 1 – Relation between induction total volume (ml/kg) and the final infusion rate (mg/kg/min)**

The proposed scheme presents a small error when compared to the real Ce’s (0.21±0.09). The Roberts’ scheme present an error of 0.46±35, Table 1.

**Table 1 – Mean and standard deviation of variables for each approach. Ce’s for the patient 1, 4 and 10 were not recorded once all the time of anesthesia induction was minor than the chosen (5 minutes after de 2nd bolus).**

**CONCLUSION**

We propose a new scheme for manual infusion of propofol that reproduces the Ce’s observed in a TCI induction, maintaining patient homeostasis. The error found between real and simulated Ce’s validates the potential of this new scheme.

**REFERENCES**