

RELAX Anaesthetics

Winner of the AAGBI Innovation prize

Induction of anaesthesia in children can be distressing for both the child and parent. Disrupted routines, unfamiliar faces, separation from family, hospital procedures and uncertainty about anaesthesia or surgery can be traumatic for patients. Minimising anxiety and distress at the time of the anaesthetic induction may reduce adverse psychological and physiological outcomes. The level of a child's anxiety varies with age, maturity, temperament and previous anaesthetic experiences. The consequences of pre-operative anxiety and distress may extend beyond the peri-operative period. The amount of time spent during induction of anaesthesia represents a significant proportion of the workload of the theatre, even in simple cases. But if children become distressed, surgery gets very delayed (leaving entire surgical teams and other patients waiting) or operations are cancelled because the child cannot be anaesthetised.



There are several non-pharmacological interventions that are likely to be helpful in reducing children's anxiety and improving their cooperation during induction of anaesthesia. These include parental acupuncture; clown doctors; hypnosis; low sensory stimulation; and hand-held video games. The original studies that reported the effectiveness of hand-held computers probably involved Nintendo devices [1]. Interestingly, 'parental presence' at induction of anaesthesia has been the most frequently studied intervention but has not been shown to be a useful intervention despite widespread practice in this setting [2].

As a paediatric anaesthetist, I have become skilled at making elephants out of gloves or working my way through 'Where's Wally' to distract anxious children in the anaesthetic room. But when I saw how effective the iPad was at keeping my own children busy during long car journeys, I saw the potential for its use in the anaesthetic room. And so I started to collect a range of developmentally appropriate apps to stimulate and occupy the attention of children just prior to induction.

The next key moment in the story was meeting Daisy Fancourt from the Centre for Performance Science at the Royal College of Music at a hospital research study day. Along with software developers, Imagineear and with funding from the charity CW+ we set about designing an app that would match the best range of content with the age of the child and the planned anaesthetic induction technique. Together we developed the tablet-based app, *RELAX Anaesthetics*, for use as a distraction tool. It was helpful to work with the charity, whose focus is on patient care, and with Imagineear who have already developed a number of well-received digital reference and training tools for clinicians and condition self-management tools for patients. The app quickly and efficiently guides anaesthetists and nurses towards suitable tablet-based content for their patients. The specific objectives are:

- to improve patient experience by offering a personalised service and bringing children's favourite technology to them when they need it most, to ease anxiety and reduce distress

- to improve theatre efficiency by reducing the time in the anaesthetic room spent on induction
- to increase the percentage of intravenous starts to reduce drug costs

Chelsea Children's Hospital offers the ideal case mix of high turnover and low risk paediatric patients to test the effectiveness of the app. Since its introduction in February 2015, we have made software upgrades and introduced some new content. Together with my colleague, Dr Corina Lee, we have conducted a randomised clinical trial to test the device. Our study showed a reduction in anxiety during induction while using *RELAX Anaesthetics* compared with traditional methods, despite similar baseline scores.

Tablet computers allow access to a range of child-friendly, developmentally appropriate content, leading to engagement and distraction. They can also modify the behaviour of healthcare providers to allow them to help children cope. Interactive distraction may improve cooperation with intravenous access or mask induction; reduced anxiety improves behavioural compliance and may improve efficiency, as well as quality of patient-centred care.

Anaesthetists around the country face similar challenges and our aim is for *RELAX Anaesthetics* to be available to every paediatric theatre nationally to improve experience, efficacy and financial efficiency.

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References

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