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USE OF VIRTUAL REALITY (VR) EXPERIENCE AND GAMING TO IMPROVE ANXIETY AND PATIENT EXPERIENCE DURING INDUCTION OF GENERAL ANAESTHESIA. PHASE 2: REFINEMENT THROUGH A PDSA CYCLE TO GENERATE OUR 'HOW TO' GUIDE AT BIRMINGHAM CHILDREN'S HOSPITAL, UK

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Background

Many children and families are nervous or indeed frankly anxious about a general anaesthetic. Technological advancements in VR have enabled immersive experiences to be achieved from simply wearing a headset to experience guided relaxation or using a hand control to play games (1).

Problem

Despite numerous strategies, many requiring substantial planning and resources, pre-operative anxiety remains a problem (2). Confidence and compliance of a child is vital to mental and physical wellbeing but also to the smooth running of the theatre list.

Strategy for change

Little is known about who benefits from VR induction, when to start and how to execute it. Feedback was sought following use of Oculus and SyncVR systems in a variety of clinical environments with 70 patients (3-17 years). We continually adapted to refine our technique as part of our plan, do, study & act (PDSA) approach.

Measure of improvement

We had 62 successful, 6 failed & 2 patients declining VR induction. They gave feedback regarding anxiety, comfort, nausea, headaches and ease of playing. The overwhelming majority of children and parents thought it reduced anxiety, improved experience and would want it again. Some viewed this as a 'must have' intervention.

Lessons learnt

- VR induction is near-uniformly liked, reducing anxiety during gas and intravenous induction
- During gas induction, facemasks fit best upside down (nose part over patients' chin) under the headset
- Headphones help the immersive experience
- Visual cues of depth of anaesthesia such as eyes closing are reduced. The temptation to remove the headset prematurely removes some of the benefit. Hand dropping, decreasing game interaction and changing respiratory pattern indicate optimal removal time
- 3–5-year-olds do better with guided relaxation 'fairy walk' or 'safari' rather than games

- >5-year-olds generally enjoy action games with some concentration such as shooting balloons
- Older girls are the most likely to decline
- The longer the patients had the headset the better as they developed competence and familiarity with games and were absorbed with improving scores etc
- We successfully transferred patients to theatres enjoying VR
- Parents watching on a tablet reported less anxiety themselves
- Patients with autism or learning difficulties particularly benefit. Parents report reduced sensory overload

Message for others

- Have a small group of 'expert users', disseminating the skillset over time
- Don't give ongoing commentary about the steps of the anaesthetic. This removes them from the immersive aspect of VR
- VR may reduce but not replace pharmacological anxiolysis. We found they complement each other in moderate-severe anxiety
- Use of VR is not a cure-all strategy. In patients with very severe anxiety VR could worsen anxiety
- We have an approved SOP for the easy clean equipment
- The scope of VR is exciting and could be a game changer to patients across the country

References:

1. https://www.oculus.com/blog/vrs-healthcare-revolution-transforming-medical-training/?locale=en_GB
2. S. Heikal and G. Stuart. Anxiolytic premedication for children. BJA Education, 20(7): 220e225 (2020)