

### Appendix 1. Baseline characteristics of children in the standard and virtual reality groups (per-protocol analysis)

	Standard care (n=45)	VR intervention (n=40)
Age (months)	48 [48–49]	48 [48–49]
Female sex	19 (42.2)	22 (56.4)
Primary language – English	43 (95.6)	37 (92.5)
Previous VR experience	6 (13.3)	2 (5)
Needle apprehension	2 [1–3]	2 [1–2]
Vision concerns	0 (0)	1 (2.5)
Behavioural concerns	1 (2.2)	1 (2.5)
Developmental concerns	1 (2.2)	0 (0)
Medical history <sup>A</sup>	5 (11.1)	4 (10)

Data are given as the median [interquartile range] or n (%).

One response each was missing for sex and needle apprehension in the virtual reality (VR) group.

<sup>A</sup>Medical history included anaphylaxis/allergy (n=3), asthma (n=2), and tympanostomy tubes, liver transplant, meningitis, prematurity (n=1 of each).

### Appendix 2. Pain, distress and enjoyment scores (per-protocol analysis)

	Standard care (n=45)	VR intervention (n=40)	P-value
Child rating of pain/distress			
Faces Pain Scale – Revised	2 [0–8]	1 [0–5]	0.06
Poker chip tool	2 [1–4]	1 [1–2]	0.13
Observer ratings of pain/distress			
Parent rating of pain (VAS)	23 [7–70]	10 [0.5–25]	0.005
Parent rating of distress (VAS)	27 [4–78]	3 [0–19.5]	<0.001
Practitioner rating of pain (VAS)	22 [10–65]	9 [3.5–19.5]	0.002
Practitioner rating of distress (VAS)	23 [7–75]	8.5 [0–20]	0.001
Enjoyment	1 [1–2]	2 [2–3]	<0.001

Unless indicated otherwise, data are presented as the median [interquartile range]. P-values were calculated using the Wilcoxon rank-sum test.

Data regarding enjoyment in the standard care group were only available for 37 children.

Data regarding the poker chip tool in the virtual reality (VR) group were only available for 39 children.

VAS, visual analogue scale.