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Methods: Mixed methods study conducted across two tertiary UK hospitals, and open to all surgical disciplines utilising robotic surgery (table1).

Results : Twenty robotic procedures were observed (109 hours), field notes: 43,712 words. 29 staff members were recruited (26 interviewed). Median (range) age: 43 (25-58), surgical experience: 13 (0.7-35) and robotic experience: 3 (0.5-8) years. 19/29 (65.5%) had had formal robotic training. Interviews' total duration was 18:14:11 hours, with median (range)/interview: 31:28 (15:00 – 56:07) minutes and total word count: 122,455 words.

Comparison item	Median (IQR) duration	Median (IQR) duration	P- value
Site	Site 1	Site 2	
Theatre time/ case	303 (65)	335 (110)	0.0496
Discipline	Urology	Gynaecology	
Console time	166 (61)	77 (82)	0.0127
Abdominal closure time	20 (4)	15 (6)	0.0087
Console % of Operative time	82 (11)	65 (15)	0.0176
Experienced bedside assistant	Present	Absent	
Abdominal closure time	16 (6)	21 (3)	0.003
Operation time % Theatre time/case	52 (12)	64 (14)	0.0326
Theatre clear-up time	37 (34)	27 (15)	0.0016

Common themes:

Robotic theatre processes are inherently time consuming: *“At the start of the surgery, we’re really busy because we need to get so many stuff into theatre and we need the robot and so many things.. If you do a straightforward (procedure) it takes 3 hours and if you do lymph node dissection it will take 4 hours..”* Healthcare Assistant 1. This was particularly the case at the beginning of the robotic programme: *“Initially, it was a bit of a mess.. just preparing the patient.. that causes a delay in starting the first patient and obviously the surgeons were not really trained at that time.. And then it took a long time for the surgery to happen..”* Anaesthetist 3.

Organisation and planning

Role clarity, teamwork, consistency and experience

Parallel working

Process overlap

Having a dedicated robotic theatre

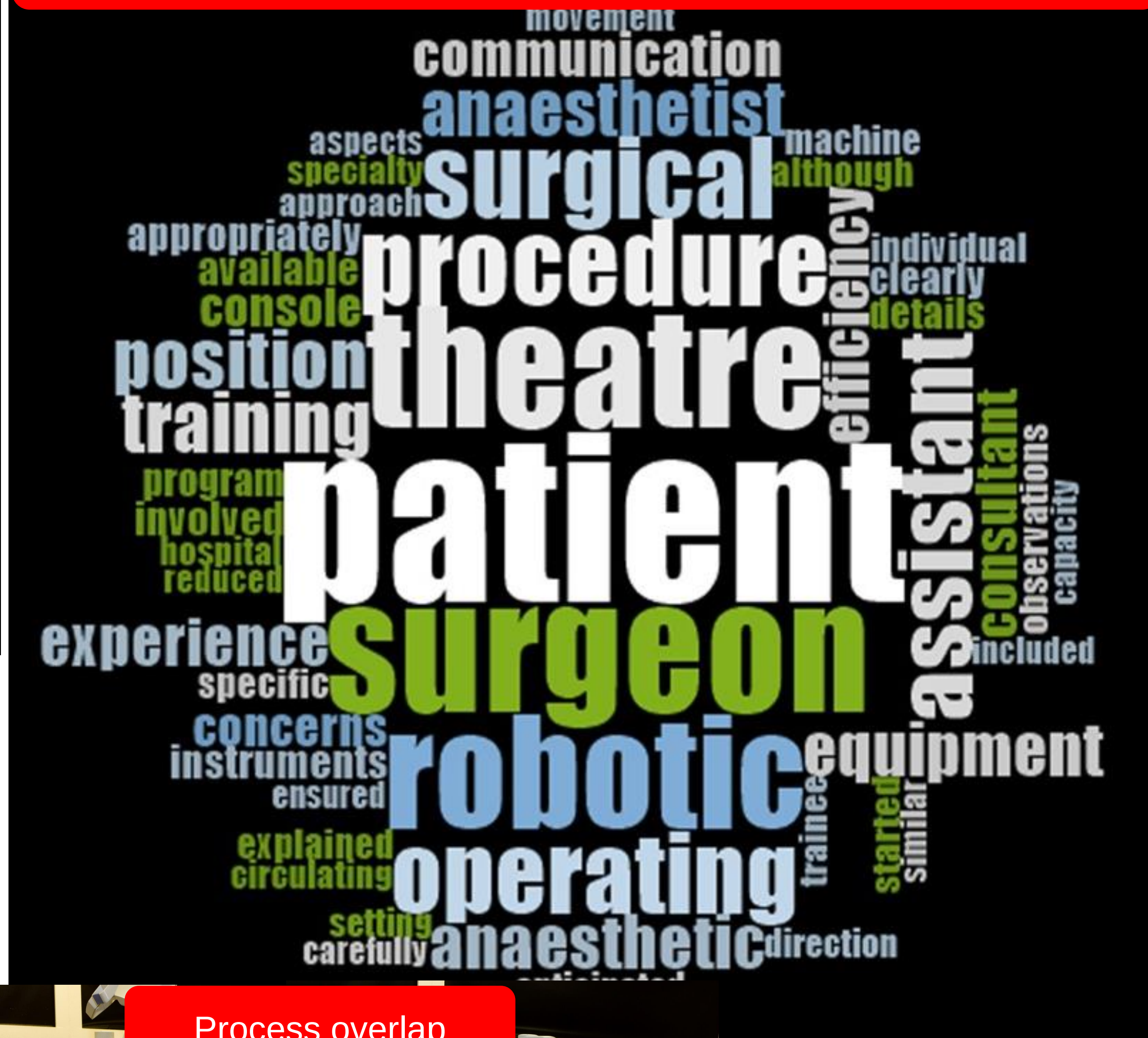
The primary surgeon is "hands-on" with the rest of the team

Patient setup in the anaesthetic room

Equipment setup in the operating room

Clear-up after the previous case

Setup for the next case



1. Cheng H, Clymer JW, Po-Han Chen B, Sadeghirad B, Ferko NC, Cameron CG, et al. Prolonged operative duration is associated with complications: a systematic review and meta-analysis. *Journal of Surgical Research*. 2018;229:134-44.
2. Amr E. Abouleish FD, Charles W, Whitten, Jeffery R. Zavaleta, Donald S. Prough. Quantifying Net Staffing Costs Due to Longer-than-average Surgical Case Durations. *Anesthesiology*. 2004;100:403-12.
3. Cofran L, Cohen T, Alfred M, Kanji F, Choi E, Savage S, et al. Barriers to safety and efficiency in robotic surgery docking. *Surgical endoscopy*. 2021.