2024 Air in circuit (MUF)

Permission to print:	Yes
Category	Air in circuit
Severity	Good Catch Near Miss
Duration of incident:	seconds
Description:	Following successful completion of a 'fast-track procedure [using the Ezzence HLM] we terminated CPB and began to MUF (modified ultrafiltration) the patient. A few minutes into MUF I noticed that air was beginning to be sucked across the oxygenator membrane (due to the arterial cannula being against the wall causing a negative MUF pressure). I immediately terminated MUF and clamped the arterial line to the patient, before the air even reached bubble detector. After, discussing with the surgeon, as a precaution it was decided not to re-start MUF. I proceeded to de-air the circuit by opening the recirc lines in case the patient became unstable. All remaining blood in the circuit was chased through with plasmalyte and processed in the cell-saver. When moving to the MUF configuration I did not connect my MUF pressure transducer, which would have alerted me to the negative MUF pressure earlier with an audible alarm.
GOOD CATCH - what went well	Vigilant observance during MUF - Air across the membrane was identified before it reached the bubble detector. Clamping the line to patient to prevent passive migration of air emboli. Communication with surgical team, who also clamped off to the patient at the table. Bubble alarm was on and working (alarmed after MUF was already stopped) and would have stopped the arterial pump if the air had entered the arterial line. Outcome was a shorter than usual MUF - with all residual volume returned to patient by the anaesthetist via the cell saver
What could we do better	Take time to pause even with the surgeon wanting rapid responses and double check before commencing MUF and add it [MUFF alarm on] to the checklist at end of CPB.
Preventive actions	1. Have a MUF checklist (mental/electronic) to ensure all safety devices are on and working prior to commencing MUF 2. Be vigilant about the seemingly short simple cases when things happen quickly and can be easy to get distracted. 3.Discuss event with team to raise awareness as part of our QA processes
Type of incident:	Management
Hospital incident filed:	No
Ext Authority Advised	No
Discussed with team:	Yes
Knowledge issue	No
Rule issue	Yes
Protocol issue	No
Skill issue	Yes
Team Issue	Yes
Patient outcome variance f	Nil
Commentary	Air entrainment during MUF has previously been reported to PIRS and likely has occurred more frequently than PIRS2 reports indicate. Of interest the new Essennz HLM provides negative servo regulation of the MUF pump that may mitigate this problem. PIRS Ed