2019 Air entrainment 3

Permission to print:	Yes
Incident type	Good Catch Near Miss
Type of incident:	Management
Procedure acuity:	Emergent
Description:	Called in for a "chest opening" in PICU at 1930 in the evening. Arrived at 1950 to a fairly calm bed space (no CPR, patient on high vent settings/oscillator, Sv02 of 50-60%). Nursing team were already on site but surgeon was yet to arrive. Discussed plan with intensivist -> ECMO. Went and spun the preprimed (Plasmaltye 148) neonatal ECMO set [Medos 800 Hilite] which was air free. Blood was checked and bought into the room by the nurse, the only units on the floor were 2 paed packs (approx 150ml RBC total) and not as fresh as we would normally required [<5days]. I asked the nurse to go and talk to the intensivist & surgeon to see if the patient was stable enough to wait for another more appropriate unit to be ordered. The call was made to prime with the 2 small units we had. Circuit was primed with blood and was completely air free at this time. We rolled the pump into the bed space, connected gas, ventilated and warmed the circuit then took a prime sample. The lines were handed up to the surgeon who was prepping to cannulate. The prime sample came back with a K of 10, otherwise was OK. I discussed with the intensivist and we talked about how much time it would take to put in the fresh unit of blood (which had arrived) into the pump in order to bring the K down. Although ECMO was required the patient was relatively stable at this time so we decided to chase through the prime with the new unit. The pump was stopped and waste bag was connected to the top of the 800 Hilite. We pushed through the new unit of blood. It was noted that the unit was really cold and there was a decent amount of pressure required to get the volume into the circuit. Once the [fresh] unit was in we spun the prime and at this point micro air was noted in the line post pumphead / preoxy. We stopped the pump, deaired by chasing through air and pushing through fluid. The pump was circulated and looked clear. While this was going on the surgeon was cannulating the neck. The lines were clamped and cut at the table, at this point the surgeon noted micro air in the lines. We handed up a 1/4 connector and started to circulate to move the air in the circuit, then by stopping the pump to push through volume to displace the air. At this point it was clear that the circuit was full of microair so the decision was made for the 2nd perfusionist to go and prime another circuit while a last minute attempt to deair was made. After a few minutes the lines were handed off and we removed the pump so the new circuit could be put on it (we had no spare pumps as we had several ECMOs on at the time). The second circuit was successfully primed with blood and ECMO was commenced uneventfully. I estimate a delay of 20-30 minutes. Currently day 6 of ECMO and patient is doing well, hope to wean soon. Circuit was kept and inspected - no cracks/splits etc found. Previous difficulty with micro air in this particular device have been experienced in this department.
GOOD CATCH - what went well	Caught air before going onto ECMO The team were amazing throughout and very supportive / helpful - nursing were happy to run and check blood, intentivist did not apply any pressure and offered assurance that patient was fine, 2nd perfusionist (although not a paediatric perfusionist) was on the ball and very attentive.
What could we do better	Had appropriate blood available for first prime so we did not have to chase through with a new unit. Been more aware of adding a very cold unit to a very warm circuit
Preventive actions	After discussion with colleagues a specific procedure for temperature management for paediatric Ecmo blood priming is being formulated
Catagory	Air in circuit

Region	ANZ
Manufacturer advised:	No
Hospital incident filed:	Yes
Ext Authority Advised	No
Patient outcome variance	Nil
Discussed with team:	Yes