

# 2021 Pime precipitate

Permission to print:	Yes
Category	Drug / Medication
Incident type	management
Duration of incident:	minutes
Description:	<p>Our heart-lung machine, a Sorin S5, was used with a phosphorylcholine-coated (Physio) Inspire 6F oxygenator and an arterial roller-pump. We prime the circuit with 1L Ringers Lactate, 500 ml Voluven (starch) and 250ml's of Mannitol. We don't use CO<sub>2</sub>-flush beforehand. Once we are certain a patient is [to be] put on bypass we add 50 ml 4.2% Sodium Bicarbonate to compensate the slightly acid priming. After adding the sodium bicarbonate the perfusionist put the sweep-gas flow on 2.5l/min 60% oxygen for about 3 minutes when we saw the priming [solution] go from totally clear to cloudy/misty with little flakes floating around. Note: the patient was not yet connected to the heart-lung machine. We immediately thought about crystallization of bicarbonate, when bicarbonate saturates and when the right conditions met, it goes from a liquid to a solid state and creates these flakes. Our solution was to connect the gas inlet of the Inspire oxygenator with the CO<sub>2</sub> gauge from the wall-mount and let 2 l/min pure CO<sub>2</sub> flush trough the oxygenator while the heart-lung machine priming recirculates for a few minutes. In a matter of seconds all the crystallization of the bicarbonate was gone. After a thorough inspection of the tubing/priming of the heart-lung machine we concluded that it was safe to continue the procedure with this circuit. On reflection the precipitate was calcium carbonate resulting from the interaction of CaCl<sub>2</sub> (in the Ringers Lactate) and the NaHCO<sub>3</sub>. This is described in a 1986 publication (Thorax 1986;41:148-151 Chalk in the prime)</p>
GOOD CATCH - what went well	The bicarbonate flakes were noted before the patient was attached to the heart-lung machine. The attending perfusionist had seen a similar scenario a while ago and used this remedy.
What could we do better	Added the Bicarbonate after commencement of surgery.
Preventive actions	While a non-calcium containing prime could be used, the decision has been made to add the bicarbonate after initiation of bypass using the existing constituents.
Type of incident:	Equipment
Hospital incident filed:	No
Ext Authority Advised	No
Discussed with team:	No
Rule issue	No
Skill issue	No
Protocol issue	Yes
Patient outcome variance f	Nil