2024 Electrical/Electronic (Cardioplegia delivery)

Permission to print:	Yes
Category	Electrical / electronic
Incident type	Good Catch No Harm Incident
Duration of incident:	minutes
Description:	An issue that occurred on our LivaNova ESSENZ Pump which has occurred once before (Nov 2023) Intended total dose of 4:1 Cardioplegia was 1 litre (there is a double pump set up - 1/4" CPL blood in one and 1/8" crystalloid in the other) however on delivery it was noted as reading 1100 mls delivered despite only having started running the CP around 30 seconds earlier at a rate of 280 mls/min. At that point I had to try to calculate based on flow rate and time how much CP had actually been delivered and then guess how much more I needed as this was unexpected and likely resulted in a delivery of less than the required dose. We did achieve asystole and the myocardial protection seemed adequate as there was no return of activity between doses and the second dose seemed to work correctly at a 500 ml total dose delivered over approximately 1.5 minutes. We did note that the recorded blood and crystalloid volumes were not accurate and there were also discrepancies in the volumes on the cockpit versus the EPM. Also the yellow vent pump 'unassign' itself mid case and the cardioplegia blood pump stop working meaning we had to use the underneath back up main controls to work it. The software version we are currently running while awaiting regulatory approval for the latest update [as the current version] does not allow us to pre-set the CP dose - we must manually run the pump and stop it once the desired volume is given. (The HLM/Cockpit version we are running is 1.3 and we are waiting for the upgrade 1.4 our EPM is currently version 1.4 and we are waiting for 1.41). We rely on the information from the CP screen on the cockpit to see the rates and volumes in real time during the delivery and if these are not accurate, we risk under or over delivering cardioplegia and not being able to trust the report which is a medico legal document.
GOOD CATCH - what went well	Noticed after starting the CP that the delivered volume could not have been right - notified the N + 1 perfusionist of the issue, they then witnessed it in real time and took photos and notes while the primary perfusionist concentrated on the bypass and delivery of CP. Gave an estimated volume that provided myocardial protection and would have been close to the desired volume of 1 Litre by checking the rate of the blood flow in mls/minute , added to the crystalloid flow rate to give total flow and then going by time. e.g. 300 mls/min for 3 minutes
What could we do better	not sure.
Preventive actions	Europe have reviewed the data logs and have come back to us with what they found - 'an isolated bubble module issue' a replacement module and an engineer are arriving in the next 48 hours so that we can use our second pump again. The implementation of new Hardware and software can throw up some unexpected errors over time and it's important to keep a detailed log of the day, time, pump, staff and arrange for the company to be notified and data logs to be accessed ASAP in order to try to diagnose how it occurred. Interestingly most issues seem to have happened on one particular machine more often that the

	other machine. Arranging a replacement cockpit as a backup, having experts analyse data, and completing a hospital adverse events system and having meetings with the company as well as clinical staff to discuss solutions and risks.
Type of incident:	Equipment
Hospital incident filed:	Yes
Ext Authority Advised	No
Discussed with team:	Yes
Knowledge issue	No
Protocol issue	No
Skill issue	No
Team Issue	No
Patient outcome variance f	Nil