SUPPPLEMENTARY INFORMATION

Evaluation of the causal effects between dopamine infusion changeover and fluctuations in mean arterial pressure in neonates

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HPLC methodology for analysis of dopamine infusions

Multiple aliquots of a single infusion were placed into an incubator (Thermo Fisher Scientific) set at 35 °C. A time zero sample was taken and frozen at -80 °C. The remaining aliquots were removed after 30 minutes, 1 hour, 2 hours after the start of the infusion and 30 minutes and 1 hour before the end of the infusion for either SOP. All samples were stored at -80 °C prior to analysis within a week of collection by high performance liquid chromatography

The HPLC system consisted of a Jasco PU-2080 Plus pump and a Rheodyne manual injector equipped with a 20 μL loop. A Kinetex® 2.6 μm EVOC18 100A 100 mm x 2.1 mm i.d. analytical column was used. The HPLC system was run at laboratory ambient temperature with a 150 μL min^{-1} flow rate and a 20 μL injection sample volume. Electrochemical detection of dopamine and current (μA) was recorded using the electrochemical analyser CHI1001A (CH Instruments, Austin, TX, USA).

The stock buffer for the mobile phase was composed of the following chemicals: 57 mM citric acid, 43 mM sodium acetate, 1.0 mM octenylsuccinic anhydride (OSA) (Sigma-Aldridge) and 0.1 mM ethylene-diamine-tetra-acetate (EDTA) (Fischer

BioReagent). The mobile phase was formulated using this buffer mixed with methanol (Fischer-BioReagents) in the ratio 90: 10 (v/v).

Standard solutions were prepared from stored samples, subject to thawing, in 0.1M perchloric acid (Fischer-BioReagents) in a 1:20 dilution. Each dilution was carried out on the day of analysis and each sample set was stored in ice between analysis.

Patient group and selection criteria

Using BadgerNet, 13 neonates (gestational age from 23 to 33 weeks and birth weight ranging from 486 to 1940 g) who had received dopamine infusions between January 2016 and December 2016 were identified to meet the selection criteria. During this period, neonates received dopamine immediately after infusion preparation which was changed every 24 hours. The SOP was altered in April 2017, where the new SOP for dopamine administration was delayed by 30 minutes after preparation (except the first dose) and the infusions were changed every 12 hours. The 30-minute wait did not apply to the first dose as the decision to start dopamine for hypotension is a relatively urgent one. This involved educating nurses and doctors of the change through emails correspondences, teaching sessions and governance days. Once again using BadgerNet, 17 neonates (gestational age from 23 to 42 weeks and birth weight ranging from 519 to 3195 g) from April 2017 to April 2018 were identified to meet the selection criteria.

Supplementary Table 1. Audit of UK based NICUs and their protocol for the duration that dopamine infusions are administered for prior to changeover. Responses were obtained from one third of all NICUs, where dopamine syringe changeovers were made on or after 24 hours.

NICU	**Maximum duration of dopamine infusion prior to changeover**
Burnley General Hospital	24 hours
Craigavon Area Hospital	24 hours
Crosshouse Hospital	24 hours
Hull Royal Infirmary	24 hours
Kings College Hospital	48 hours
Leicester Royal Infirmary	24 hours
Liverpool Women's Hospital	24 hours
Medway Maritime Hospital	24 hours
Ninewells Hospital & Medical School	24 hours
Nottingham University Hospital	24 hours
Princess Anne Hospital	24 hours
Royal London Hospital	24 hours
Singleton Hospital	24 hours
Southmead Hospital	24 hours
St George's Hospital	48 hours (use a PALL filter)
St Peter's Hospital	24 hours
St Thomas' Hospital	24 hours
Sunderland Royal Hospital	24 hours
University Hospital Coventry	24 hours
University Hospital of North Staffordshire	24 hours
William Harvey Hospital	24 hours
Wishaw General Hospital	24 hours