

EXPOSURE TO DI (2- ETHYLHEXY) PHTHALATE AMONG PREMATURE NEONATES AND ITS RELATION TO PVC MEDICAL PROCEDURES IN NEONATAL INTENSIVE CARE UNIT IN TAIWAN

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Background and Aims: Neonates are exposed to high levels of di-(2-ethylhexyl) phthalate (DEHP) through numerous medical procedures in the neonatal intensive care unit (NICU). Our aim is to assess the contribution of specific medical devices to the DEHP exposure.

Methods: We recruited 32 premature neonates, 20 with very low-birth weight (VLBW, <1500 g) and 12 with low-birth weight (LBW, <2500 g), and 31 controls at a neonatal intensive care unit (NICU) from a medical center in central Taiwan. We recorded the medical procedures including endotracheal tube (ETT), orogastric tube (OGT), nasogastric tube (NGT) of each subject and collected their urine samples for determination of three metabolites of di-(2-ethylhexyl) phthalate (DEHP) using reversed-phase high-performance liquid chromatography-atmospheric pressure chemical ionization-tandem mass spectrometry.

Results and Discussions: The median level of DEHP metabolites in premature neonates treated with ETT and OGT or NGT were significantly 2-fold higher than those treated without ETT, OGT or NGT. The median level of DEHP metabolites in premature neonates treated with intravenous (IV) injection was significantly ≥ 2 fold higher than healthy controls who received IV injections. Median levels of three DEHP metabolites were similar in VLBW and LBW. These data suggest that PVC-containing devices are the major defining factor in DEHP exposure levels in neonates in the NICU. We urge the use of PVC-free or alternative materials in medical devices, especially for ETT, OGT, NGT and IV tubing in the NICU. The health effects of high DEHP exposure on premature neonates in the NICU is worthy of further investigation.