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A comparison of two neonatal withdrawal scales: A retrospective case note audit

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Abstract *Aim:* The aim of this study was to compare the Lipsitz Withdrawal Scale (LWS) and Modified Finnegan Withdrawal Scale (MFWS) with regard to their equivalent ability to guide therapeutic interventions for neonates withdrawing from opioids and non-opioid substances.
Method: Medical records of 34 patients born between 2000 and 2001 and 28 patients born between 2010 and 2011 at the WCHN were audited, with data collected on neonates scored with either the LWS or MFWS, respectively. Additional information were collected from case notes and hospital databases about the identified neonates.
Results: There was no difference in treatment initiation between the LWS and MFWS for opioid exposed neonates. Scoring was commenced significantly closer to time of birth for opioid exposed neonates, treated with morphine and assessed with the MFWS. Opioid exposed neonates, treated with both morphine and phenobarbitone were administered significantly higher doses of morphine when assessed with the LWS.
Conclusion: These findings confirm that the same percentage of neonates are receiving pharmacological intervention irrespective of which scale they are assessed with. Findings also suggest that neonates are now being assessed for symptoms closer to time of birth, potentially leading to quicker treatment initiation,

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smaller doses of medication and shorter hospital stays. Future prospective studies should be undertaken to compare the two scales further.

Introduction

In current practice, neonates exposed to opioids and non-opioids in utero are all assessed with withdrawal tools only validated for term neonates withdrawing from opioids; the Modified Finnegan Withdrawal Scale (MFWS) or the Lipsitz Withdrawal Scale (LWS). There has been no study to date attempting to firstly compare whether the two scales are introducing pharmacological intervention to the same percentage of withdrawing neonates, or secondly validating either scale for use on neonates withdrawing from non-opioids.

Background

Substance use during pregnancy is a persisting problem within Australia (Abdel-Latif et al., 2013). Neonates born to substance using mothers are at increased risk of prematurity, low birth weight, and developing Neonatal Abstinence Syndrome (NAS). NAS is the manifestation of signs and symptoms exhibited by a neonate of a substance using mother as a result of withdrawal from supply of the drug the mother used while pregnant (D'Apolito, 2009; Matic, 2008). Neonates who develop NAS may require longer hospital stays and pharmacological treatment (Abdel-Latif et al., 2013).

In 1975 the Lipsitz Withdrawal Scale (LWS) (Lipsitz, 1975), Finnegan Withdrawal Scale (FWS) (Finnegan et al., 1975), and subsequent modified versions of the Modified Finnegan Withdrawal Scale (MFWS) were developed to assess the severity of withdrawal symptoms in neonates exposed to opioids in utero and help form treatment guidelines for these neonates. It is estimated that 48%—94% of all neonates born to mothers using opioids during pregnancy will develop NAS signs (Blandthorn et al., 2011). Neonates can also exhibit withdrawal symptoms when exposed to other substances in utero, such as benzodiazepines, alcohol, some antidepressants, and cocaine (Hannigan and Armant, 2000; Schiller and Allen, 2005). However the LWS and MFWS scales have not been validated for use with other substance exposures. Despite this, the scales are commonly used in practice for assessment and pharmacological decisions for neonates withdrawing from non-opioids (Eyler et al., 2001; Government of South Australia, 2005). The LWS was used from 1997 to 2002 at the Women's and Children's Health Network (WCHN), South Australia, South Australia's major tertiary midwifery teaching hospital. Although there was no evidence to suggest that the MFWS was the superior to the LWS, practice changed in 2002 and the MFWS replaced the LWS.

Given the lack of validation for both the LWS and MFWS, alongside a change in clinical practice within the WCHN, the aim of this study was to determine whether there is a difference in NAS treatment requirement and initiation for neonates exposed to opioid and non-opioid substances in utero assessed with the LWS compared to the MFWS.

Method

Sample and design

The study design was a retrospective between groups design utilising archival data and patient case notes. Two groups of neonates were studied. The first group was managed for withdrawal using the LWS (1 January 2000—31 December 2001). The second group was managed using the MFWS (1 January 2010—31 December 2011). These dates were chosen as the LWS was used at the WCHN until the beginning of 2002, when the MFWS was introduced. The 2002 data for the MFWS was not used to allow time for implementation and adjustment to the new tool. Ethics approval was obtained through the WCHN Human Research Ethics Committee (HREC) (audit approval number 636A) and the University of South Australia's HREC. All data collected were de-identified.

Neonates for possible inclusion in the study were identified as having been exposed to substances in utero using the following criteria: 1) a positive neonate urine toxicology screen; 2) reports of maternal substance/alcohol use; and 3) NAS diagnosis through case files.

Neonates born under 37 weeks gestation with preterm related complications were excluded; as were neonates exposed to buprenorphine. Buprenorphine was approved by the Food and Drug Administration (FDA) for use to treat opioid