Journal of Neonatal Nursing 25 (2019) 265–267

Contents lists available at ScienceDirect

Journal of Neonatal Nursing

journal homepage: www.elsevier.com/locate/jnn

Editorial

Goodbye 2019 and hello 2020: The futuristic decade

As we enter the Winter season and the 2019 JNN series comes to a close, we have a great selection of reviews and research to read during the 2019 Holiday season. In addition, as we say hello to 2020, we provide 20 futuristic technologies predicted to transform care.

Dr Patricia Bromley from the University of Tasmania starts the final 2019 Winter issue of JNN with a review article titled “A Paradigm Shift from competence to Capability in Neonatal Nursing”. Dr. Bromley explains advances from the well-known term and over-used concept called “competence” to a broader and more holistic concept called ‘Capability’. She describes capability as an integration of knowledge, skills, personal qualities and understanding used appropriately and effectively – not just in familiar and highly focused specialist contexts, but in response to new and changing circumstances. Her paper discusses a more forward looking concept, Capability, and argues for a move away from competence to a more holistic view of Capability in neonatal intensive care nursing.

A second review comes to us out of the Cambridge University Hospital by Dr. Sarah-Jane Archibald. Here she presents the findings of a small-scale pilot study investigating fathers' experiences of attending a support group on a Neonatal Intensive Care Unit. A father's group was set up with the intention of enabling a safe and supportive space for fathers with a baby on the neonatal unit. Emerging themes are discussed, including the value of the shared group experience, enjoyment and feelings of validation and inclusion of being an active family member. Implications for future clinical practice are addressed, with recommendations for other neonatal units that may be considering running such groups.

Dr. Julia Petty presents the first original research manuscript titled “The knowledge and learning needs of health professionals in providing support for parents of premature babies at home: a mixed-methods study”. She utilized a mixed-methods approach comprised of a questionnaire, semi-structured interviews and secondary data analysis. Julia's study is aimed at exploring the knowledge base and learning needs of community health professionals, to further understand how they can adequately support parents in the community with premature babies. Dr. Petty utilizes a thematic analysis revealing important insights into the knowledge and learning needs necessary to support parents of premature babies in the community.

From the UK, Wilson, Nzirawa, and Mannan, similar to Dr. Petty's research, demonstrates the importance of adequately supporting parents and caregivers of premature babies in the community. These authors utilized an in-house devised quality of life assessment tool within a questionnaire aimed at identifying the Home Oxygen Therapy (HOT) population in an outer city acute hospital and the effect of HOT on the quality of life of those caring for such patients.

Mohamed Fatma Abdellah, Sawsan Mahmoud El-Bana, Eman Abd-Elaziz Mohamed, and Nagat Farouk Abolwafa utilize a pre/post quasi-experimental research design to study the effects of an educational program on pediatric nurses' knowledge and practice regarding selected Non-pharmacological techniques to relive pain in neonates.

A large body of evidence identifies issues related to staffing and nursing workload have the potential to impact patient outcomes, and neonatal patients are at an increased risk of experiencing adverse events related to increases in nursing workload. Utilizing an appropriate nursing workload tool has been recognized to accurately meet patient nursing needs.

Despite a thorough literature search, no neonatal nursing workload tool for use in a surgical neonatal intensive care unit (NICU) has been published, until now. Kerry Hart, Allison Marchuk, and Jessica-Lynn Walsh, under the direction of Dr. Alexandra Howlett, from Calgary, Alberta, Canada, describe modifications undertaken to meet surgical and complex care needs within an existing neonatal nursing workload tool, the Winnipeg Assessment of Neonatal Nursing Needs Tool (WANNNT) (Winnipeg Regional Health Authority, 2013). The authors eloquently share the development and validation of the Winnipeg Assessment of Neonatal Nursing Needs Tool-Surgical Complex (WANNNT-SC), a nursing workload tool for use in a surgical neonatal intensive care unit (NICU).

Tens of thousands of infants are impacted yearly by prenatal opioid exposure. The term neonatal opioid withdrawal syndrome (NOWS) is now replacing the more familiar term neonatal abstinence syndrome (NAS), as it relates specifically to the withdrawal from Opioids. Opioid addiction is one of the most alarming epidemics of this century in the United States. According to the Centers for Disease Control and Prevention (CDC), opioid use particularly affects women of reproductive age, partially because problems such as chronic pain are often treated with opioid prescriptions (Ko et al., 2017; Salter et al., 2015). Opioid intake during pregnancy can be harmful not only to the health of the mother, but also to the health of the newborn. Neonatal opioid withdrawal is one of the most common results of intrauterine opioid exposure, with an incidence of 75–90 percent in exposed infants (Hudak and Tan, 2012; Galinkin and Koh, 2014; Green et al., 2011; Patrick et al., 2015). Ongoing debate continues related to standardized treatment protocols of this oftentimes puzzling condition. Treatment has historically focused on pharmacologic interventions; however, there is limited research pointing to nonpharmacologic methods of treatment.

Allison Adrian, from the US, shares an Integrative Review on “Factors Influencing Healthcare Providers' Behaviors in the Care of Infants with Neonatal Abstinence Syndrome (NAS)”. The purpose of her integrative review is to assess the current knowledge of the

https://doi.org/10.1016/j.jnn.2019.10.001

Available online 24 October 2019
1355-1841/ © 2019 Neonatal Nurses Association. Published by Elsevier Ltd. All rights reserved.

individual and contextual factors that influence healthcare providers' behaviors in implementing nonpharmacological interventions that decrease the length of stay for infants with NAS through the lens of the Theoretical Domains Framework.

Deanne August, Klazina Marie van der Vis, and Karen New share a contemporary piece titled "Conceptualising skin development diagrammatically from foetal and neonatal scientific evidence". Using foetal and neonatal scientific evidence, as well as lateral markers (time brackets for weeks of development) from Fox's work (Fox, 2011), the authors have developed an extended diagram for skin development to span from 0 to 40 weeks gestation, sharing detailed illustrations of essential skin structures and elements. This article is a visionary and futuristic approach to looking at how a premature skin differs from older patients.

On behalf of Elsevier, Drs. Breidge Boyle and Leslie Altimier, we would like to thank the readers for your tremendous support of the Neonatal Nurses Association (NNA), Council of International Neonatal Nurses (COINN), and the Journal of Neonatal Nursing (JNN). We wish you all a peaceful 2019 Holiday season and look forward to an exciting new decade: 2020!

20 Futuristic Medical Technologies predicted to Transform Care in 2020, and beyond …

1. **We'll control devices via microchips implanted in our brains**
   - https://www.popsci.com/technology/article/2009-11/intel-wants-brain-implants-consumers-heads-2020/
2. **Universal translation will be commonplace in mobile devices (Probably)**
   - https://www.popsci.com/technology/article/2011-04/darpas-newest-language-translator-would-be-less-handheld-device-more-robot-assistant/
3. **We'll create a synthetic brain that functions like the real deal** (Switzerland's Blue Project)
   - https://www.popsci.com/technology/article/2009-11/digital-cat-brain-runs-blue-gene-supercomputer/
4. **A Bionic Eye**
   - https://www.eurekalert.org/pub_releases/2018-08/uom-rbr082818.php
5. **Smart Contact Lenses**
   - http://koreabizwire.com/s-korean-researchers-develop-contact-lenses-that-diagnose-diabetes/109087
6. **Tumor-sniffing iKnife**
   - https://www.bbc.com/news/health-23348661
7. **Artificial Kidney Made of Nanofilters**
   - https://www.medgadget.com/2016/02/artificial-kidney-made-of-nanofilters-and-living-cells-to-replace-dialysis.html
8. **Artificial Womb**
   - https://metro.co.uk/2019/05/14/human-babies-born-using-an-artificial-womb-possible-in-a-decade-8156458/
9. **Lacto-Engineer Milk from mom**
   - Rochow N, Fusch G, Choi A et al. Target fortification of breast milk with fat, protein and carbohydrates for preterm infants. J Pediatr. 2013; 163:1001–7.
10. **Breath analysis to measure hemolysis** based on exhaled carbon monoxide
    - Christensen RD, Lambert DK, Henry E et al. End-tidal carbon monoxide as an indicator of the hemolytic rate. Blood Cells Mol Dis. 2015; 54:292–6.
11. **Servo controlled oxygen administration**
    - Hütten MC, Goos TG, Ophelders D et al. Fully automated predictive intelligent control of oxygenation (PRICO) in resuscitation and ventilation of preterm lambs. Pediatr Res. 2015; 78:657–63.
12. **Assessment of neonatal heart rate during resuscitation through sensors within an umbilical cord clamp**
    - Grubb M, Carpenter J, Crowe JA et al. Forehead reflectance photoplethysmography to monitor heart rate: preliminary results from neonatal patients. Physiol Meas. 2014; 35:881–93.
13. **Predictive Analytics**
    - Suresh S. Big data and predictive analytics: applications in the care of children. Pediatr Clin N Am. 2016; 63:357–66.
14. **Aerosolized Surfactant**
    - Lampland AL, WolfsonMR, Mazela J et al. Aerosolized KL4 surfactant improves short-term survival and gas exchange in spontaneously breathing newborn pigs with hydrochloric acid-induced acute lung injury. Pediatr Pulmonol. 2014; 49:482–9.
15. **Continuous, non-invasive monitoring of endotracheal tube position and obstruction**
    - Mansfield JP,Wodicka GR. Using acoustic reflectometry to determine breathing tube position and patency. J Sound Vib. 1995; 188:167–88.
16. **Liquid Ventilation**
    - Kaushal A, McDonnell CG, Davies MW. Partial liquid ventilation for the prevention of mortality and morbidity in paediatric acute lung injury and acute respiratory distress syndrome. Cochrane Database Syst Rev. 2013; 28:CD003845.
17. **Xenon gas**
    - Dingley J, Tooley J, Liu X et al. Xenon ventilation during therapeutic hypothermia in neonatal encephalopathy: a feasibility study. Pediatrics. 2014; 133:809–18.
18. **Next-gen neonatal neuro-monitors to monitor microvascular cerebral blood flow and blood oxygenation**
    - Giovannella M, Contini D, Pagliazzi M et al. BabyLux device: a diffuse optical system integrating diffuse correlation spectroscopy and time-resolved near-infrared spectroscopy for the neuromonitoring of the premature newborn brain. Neurophotonics. 2019; 6 (2):025007. https://doi.org/10.1117/1.NPh.6.2.025007.
19. **Analysis of fecal volatile organic compounds (VOCs) as non-invasive biomarker to predict LOS at a preclinical stage.**
    - Berkhout DJC, Niemarkt HJ, Buijck M et al. Detection of Sepsis in Preterm Infants by Fecal Volatile Organic Compounds Analysis: A Proof of Principle Study. Journal of Pediatric Gastroenterology and Nutrition. (2017); 65 (3):e47-e52. https://doi.org/10.1097/MPG.0000000000001471.
20. **Capacitive sensors to assess newborn HR**
    - Atallah L, Serteyn A, Meftah M, Schellekens M, Vullings R, Bergmans JWM et al. Unobtrusive ECG monitoring in the NICU using a capacitive sensing array. Physiol Meas 2014; 35:895–913.

References

Fox, M.D., 2011. Wound care in the neonatal intensive care unit. Neonatal Netw. 30, 291–303. https://doi.org/10.1891/0730–0832.30.5.291.

Galinkin, J., Koh, J.L., 2014. Recognition and management of iatrogenically induced opioid dependence and withdrawal in children. Pediatrics 133 (1), 152–155. https://doi.org/10.1542/peds.2013-3398.

Green, T.C., Grau, L.E., Carver, H.W., Kinzly, M., Heimer, R., 2011. Epidemiologic trends and geographic patterns of fatal opioid intoxications in Connecticut, USA: 1997-2007. Drug Alcohol Depend. 115 (3), 221–228. https://doi.org/10.1016/j.drugalcdep.2010.11.007.

Hudak, M.L., Tan, R.C., 2012. Neonatal drug withdrawal. Pediatrics 129 (2), e540–560. https://doi.org/10.1542/peds.2011-3212.

Ko, J.Y., Wolicki, S., Barfield, W.D., et al., 2017. CDC Grand rounds: public health strategies to prevent neonatal abstinence syndrome. MMWR Morb. Mortal. Wkly. Rep. 66 (9), 242–245. https://doi.org/10.15585/mmwr.mm6609a2.

Patrick, S.W., Davis, M.M., Lehmann, C.U., Cooper, W.O., 2015. Increasing incidence and geographic distribution of neonatal abstinence syndrome: United States 2009 to 2012. J. Perinatol. 35 (8), 650–655. https://doi.org/10.1038/jp.2015.36.
Salter, T., Ridely, N., Cummings, B., 2015. Opportunities to Address Pregnancy, Drug Use and the Law. White Paper on Implementation of Chapter 820, Nashville, TN: Tennessee Association of Alcohol, Drug, and Other Addiction Services. AADAS.
Winnipeg Regional Health Authority, 2013. Winnipeg Assessment of Neonatal Nurse Needs Tool (WANNNT). accessed 1-10 December 2016. http://cna-aiic.ca/~/media/cna/files/safe-staffing-toolkit/WANNNT-2013.pdf.

Leslie Altimier*
Northeastern University, Boston, MA, USA
Philips HealthTech, Cambridge, MA, United States
E-mail address: laltimier@gmail.com.

Breidge Boyle
Queens University, Belfast, United Kingdom
E-mail address: breidge.boyle@qub.ac.uk.

* Corresponding author. Northeastern University, Boston, MA, USA.