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Instruments that measure practitioner performance of the complete examination and screening of the neonate - results of a systematic review using the COSMIN methodology.

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INTRODUCTION

The complete examination and screening of the neonate (CESoN) is an important universal, detailed head-to-toe physical check of the neonate within a specified timeframe following birth to ascertain ongoing wellbeing, and to screen for signs and symptoms of potentially life-threatening congenital disorders[1-4]. The literature indicates that certain groups of healthcare professionals (HCPs) that become qualified in the CESoN can struggle to examine babies regularly, and then may stop performing the CESoN altogether[5-6]. The aim of the systematic review was to identify an instrument that measures practitioner performance of the CESoN. Such an instrument could then be used or modified to permit revalidation of healthcare professionals continuing competence in the CESoN.

MATERIAL AND METHODS

Using a PICO framework[7-8], seven databases including Medline, CINAHL, and Web of Science were searched for citations published within a defined timeframe. Following title and abstract screening using Covidence, full-text review of 212 papers led to four instruments[9-12] being identified as eligible for analysis using the COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) methodology[13-15].

RESULTS

Using the COSMIN Risk of Bias Checklist, the ten measurement properties of each instrument were assessed, as per the COSMIN taxonomy[16], with an emphasis on the instrument development and content validity aspects. Since a meta-analysis of pooled data for particular measurement properties was not possible, the COSMIN summary of findings consisted of qualitative reporting of results. All four instruments did not score highly in the instrument design and development sub-scale. The best rated instrument in the overall COSMIN ratings was the only one that had been developed to measure quality of performance of the CESoN by qualified HCPs[12].

CONCLUSIONS

The majority of instruments that measure practitioner performance of the CESoN have been designed to assess student learners. None of instruments assessed using COSMIN were designed for use by qualified HCPs for the purpose of either regular self or peer-assessment of continuing competence. To support high quality evidence-based practice, revalidation, and other CPD activities[17-20]

in qualified HCPs that conduct the CESoN, the best rated instrument from this systematic review[21] will be modified[22-23] then piloted with paediatricians, nurses, and midwives.

None declared.

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PREDICTIVE FACTORS OF TRANSIENT VERSUS PERMANENT CONGENITAL HYPOTHYROIDISM

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Introduction: Congenital hypothyroidism (CH) is a potential cause of irreversible neurocognitive deficits if left untreated or treated belatedly. CH is classified as permanent (PCH) or transient (TCH). Late recognition of transient CH is associated with frequent laboratory testing, increased family anxiety, and the risk of exposure to excessive levothyroxine (LT4) amounts. In the present study, we investigated potential predictors of TCH that could be useful in clinical practice to individualize treatment plans and facilitate earlier cessation of LT4 therapy.

Materials and Methods: A retrospective cohort pragmatic study was conducted, enrolling neonates diagnosed with CH by neonatal screening or by screening due to risk factors in a University Hospital Pediatric Endocrinology Unit in Northwestern Greece during an 8-year period. The LT4 dose and TSH levels of children from birth to three years of age (treatment discontinuation) were recorded.

Results: 92 neonates were included in the study; 39 were diagnosed with PCH and 52 with TCH. TCH neonates had significantly lower gestational age than PCH neonates (p=0.013). TSH at diagnosis was higher in the PCH group (p=0.008). LT4 doses (μg/kg/d) were consistently higher in the PCH group, but both groups experienced a decrease in LT4 dose from birth to 3 years. The optimal LT4 doses for distinguishing between TCH and PCH were 3.8μg/kg/d at 6 months, 3.0μg/kg/d at 12 months, 2.6μg/kg/d at 2 years, and 2.5μg/kg/d at 3 years of age. The need for a daily total LT4 dose>50μg was observed more frequently in the PCH group (p=0.0001). Independent predictors of discrimination between PCH and TCH were TSH levels at diagnosis (beta=-4.37, OR:0.59, CI: 0.46-0.74, p<0.001), the daily dose of LT4 at 12 months of age (p=0.0007) and 24 months (p=0.0013), TSH>5μIU/mL (p=0.0003) and the need for LT4 dose increase more than twice (p=0.0009).

Conclusions: Over half of the neonates with CH were diagnosed with TCH. To identify children with possible TCH, LT4 dosing, and a combination of prognostic markers such as total LT4>50μg along with the diagnosis TSH levels, the need to increase the LT4 dose during treatment and TSH levels>5μIU/mL at any time during the treatment period could be used.

None declared

Parameter	PCH(n=39)	TCH(n=53)	p
female	14	28	ns
Gestational age	37±2	35±3	0.013
Birthweight	2665±661	2217±783	0.004
Maternal thyroid disease	6/39 15%	19/53 36%	0.0029
TSH at diagnosis	15.3(10.6, 79)	8,6(7.6, 10,7)	0.008
LT4 dose at 6 months	4.4±1.5	2.5±0.5	0.0001
LT4 dose at 12 months	3.5±1.3	1.97±0.4	0.0001
LT4 dose at 2 years	3.2±0.9	1.8±0.4	0.0001
LT4 dose at 3 years	3.1±0.7	1.6±0.3	0.0001
TSH at 6 months	3.1 ±1.4	1.86± 0.8	0.0001
TSH at 12 months	3.0 ±2	2.0 ±0.88	0.0014
TSH at 2 years	3.0 ±2	2.2± 0.8	0.009
TSH at 3 years	2.8 ±1.5	2.01± 0.6	0.003
LT4 dose>50µg/d	11/39 (38%)	0/53 (0%)	<0.0001
LT4 dose increase (times)	5.2 ±1.4	1.8±1.2	0.0001
TSH >5 during treatment	30/39 (77%)	2/53 (3.8%)	0.0001

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MEDICALLY ASSISTED PROCREATION WITH CRYOPRESERVED EMBRYOS – EXTENDED FOLLOW-UP IN CHILDHOOD

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Introduction
Children born through Medically Assisted Procreation (MAP) represent 3.3% of births in Portugal according to the latest 2020 study. The use of frozen embryo transfer (FET) is increasingly common, highlighting the importance of studying the follow-up of these children in assessing health risks compared to those conceived without MAP.

Materials and Methods
A prospective observational study was conducted from January 2017 to December 2023, including children born through FET. These children underwent follow-up consultations at 1, 4, 6, 9, 12, 18, 24, 36, and 48 months of age. Psychomotor development (PMD) was assessed using the Modified Mary Sheridan Developmental Assessment Scale, growth was evaluated using percentiles from the World Health Organization (WHO) growth curves, chronic pathology, need for hospitalizations, and surgeries were recorded. Descriptive and analytical statistical analysis of the data was performed.

Results
The study included 163 children, 51.5% were male, and 84.7% resided in the Northern Region of Portugal. Follow-up adherence was 98.2% at 12 months, 85.3% at 24 months, and 74.2% at 36 months, with 27.6% currently under follow-up. Regarding weight evolution, 40.5% were at or above the 50th percentile at 1 month, and at 4, 6, 9, 12, 18, 24, and 36 months of age, 45.1%, 54.1%, 56%, 62%, 66.7%, 67.6%, and 65.9% of children, respectively, were at or above the 50th percentile. In terms of height evolution, 18.3% were at or above the 50th percentile at 1 month, and at 4, 6, 9, 12, 18, 24, and 36 months of age, 46.1%, 53.5%, 52%, 58.7%, 58.3%, 65.1%, and 61.5%, respectively.
Regarding PMD, 88.4% exhibited appropriate development, with 3 children diagnosed with Autism Spectrum Disorder (ASD; 2.9%, one of whom was premature). Most children were healthy (75.4%), and among those diagnosed with chronic pathology, the majority had allergic/respiratory conditions (34.5%). Approximately 12.7% required hospitalization, and 9.5% underwent surgery. No deaths were recorded after the neonatal period.

Conclusions
Overall, the growth, PMD, and chronic pathology prevalence among FET-conceived children mirrored national averages. The authors emphasize the importance of maintaining extended follow-up of these children for robust and generalizable conclusions.

No conflict of interest

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SINGLE OPERATOR POINT-OF-CARE ULTRASOUND (POCUS) IN A LEVEL 2 NICU AND IMPACT IN TREATMENT AND PROCEDURES.

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INTRODUCTION

POCUS is considered nowadays an important tool for diagnosis and treatment in all areas of medicine. In neonatology it has other advantages, a portable form of non-ionising imaging could be performed bedside. Applications of POCUS in NICU included rapid assessment of cranial pathology, cardiac function, lung pathology, bowel pathology (NEC), and guided procedures as central lines or chest drains.
An important number of neonatologists are trained in Neonatologist Performed Echocardiography (NPE), Targeted Neonatal Echocardiography (TNE) or in Functional Echocardiography (FnECHO), others also have the skills for echo guided vascular access, Craneal ultrasound (CRUS), Lung ultrasound (LUS) and abdominal (renal and bowel (BUS)) examinations.
The purpose of this review is thus to provide an overview of the applications of POCUS in NICU.

MATERIAL AND METHODS

A retrospective review of the POCUS exams performed by a single operator (Consultant Neonatologist trained in several disciplines of POCUS) in a level 2 NICU in Galway, Ireland, in a period of 6 months.
All the assessments were performed with a GE Vivid S70N Ultrasound with a ML6-15 MHz linear transducer, a 3-10 MHz convex transducer, a 12S or 6S sector transducer.

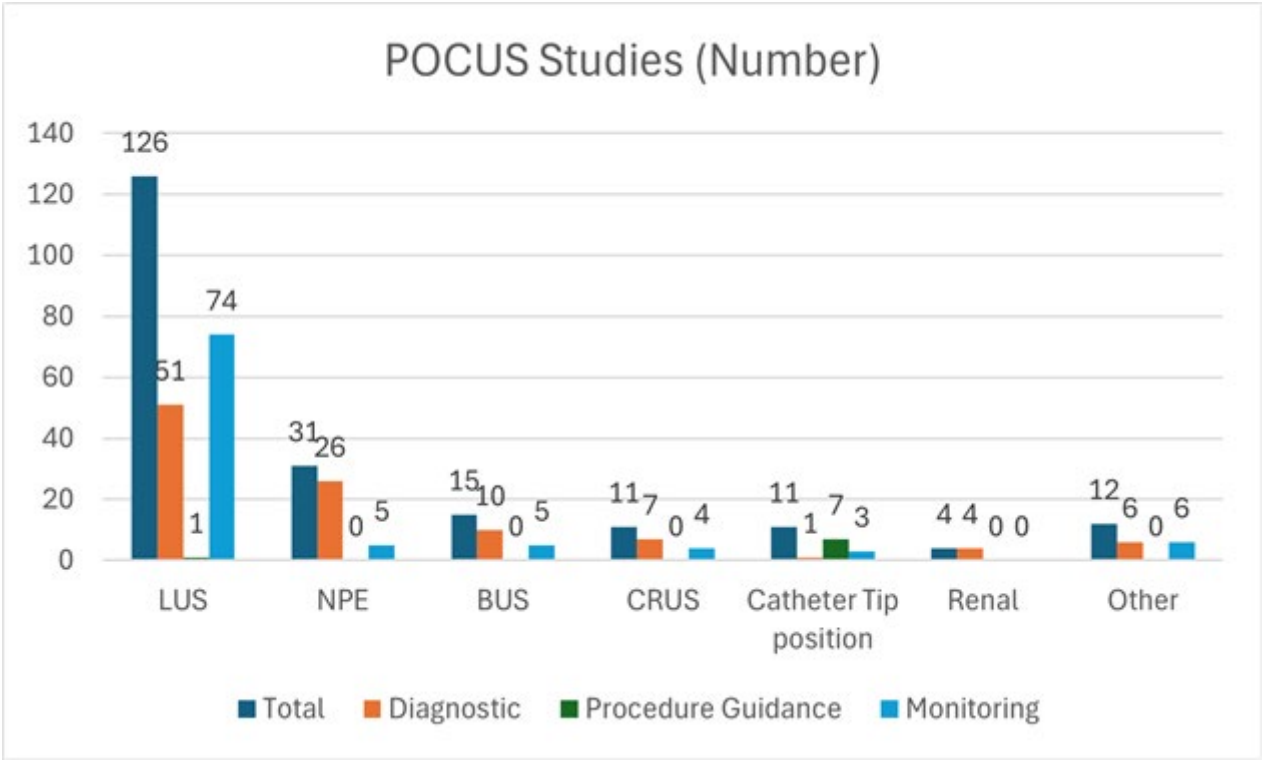
RESULTS

A total of 210 ultrasound examinations were performed by the author (trained in POCUS, NPE, LUS and CRUS) in the 9 months. The most frequent POCUS exam was LUS, NPE, abdominal with focus assessment of bowel (BUS) and CRUS. Other exams include catheter tip position, endotracheal tube (ETT) tip position, renal, soft tissue, and bone. 105 studies were considered diagnostic, 97 monitoring and 8 procedure guidance. In 165 POCUS studies we consider had some impact in the diagnosis or treatment.
Figure 1

CONCLUSIONS

POCUS is transforming the field of neonatal critical care, and regular integration of POCUS into the NICU should be considered with an instructional model (theoretical and hands-on) for training the local staff, the develop of local clinical guidelines and protocols for POCUS scan and standardization of reports.

None declared


POCUS Studies (Number)
140
120
100
80
60
40
20
0
126
51
1
74
31
26
0
5
15
10
0
5
11
7
0
4
11
1
7
3
4
4
0
0
12
6
0
6
LUS
NPE
BUS
CRUS
Catheter Tip position
Renal
Other
Total
Diagnostic
Procedure Guidance
Monitoring

128

SIMPLE BUNDLES FOR BETTER PREMIE OUTCOMES: A QUALITY IMPROVEMENT STUDY

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INTRODUCTION

Over the last few decades, medical care in NICUs has improved, resulting in significantly increased survival rates of smaller infants. To provide the best possible conditions for NICU graduates, we planned a quality improvement study with an implementation of bundles for infants born before 32 weeks.

MATERIAL AND METHODS

Our NICU is a 61-bed level 4 NICU in a perinatology reference center, dealing with various types of congenital anomalies in need of surgical treatment, in addition to premature infants. Neonates were hospitalized in 5 different sections, according to their severity of sickness or need of isolation. After September 2021, we changed our protocols and started bundles for our inborn premature infants and assigned one of the sections with 12 beds for them. Most experienced and certified NICU nurses were selected for this section. To promote breast milk KMC was initiated as early as possible. Colostrum was waited for 48 hours and lactation nurse supported the mothers to achieve this goal. Noise levels of the equipments were lowered and enlightening was kept low. Monitorizations(all non-invasive), intubations, interventions such as catheterizations, blood sampling, parenteral and enteral nutrition, oral motor stimulations were applied according to the bundles. We recorded the demographic data and all of the clinical follow up and discharge findings of these infants(Group1) and compared with the ones hospitalized a year before(Group2).

RESULTS

Group 1(n=53), Group 2(n=55) were similar for their gestational weeks, birthweights, antenatal steroid, need for resuscitation and intubation in delivery room. Days on invasive MV was significantly longer in Group2($p<0.05$), severe NEC, IVH, BPD, ROP, number of proven LOS attacks and mortality were less in Group1 but did not reach statistical significance. Birthweights at discharge were similar but hospitalization duration was significantly shorter in Group1($p<0.05$).

CONCLUSIONS

Bundles, and keeping premies away from other severe surgical cases or term infants in need of NICU support, result in improvement on outcomes. We believe it is important to implement single(family-integrated care) rooms for premies, but when it is not possible architecturally or due to medical staff insufficiency, crowded units can assign a separate section with special bundles for their premies.

None declared

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Evaluation of Compliance with the American Academy of Pediatrics 2022 Jaundice Guideline in a Centre in Turkey

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Aim:The American Academy of Paediatrics (AAP) updated its jaundice guidelines in 2022 and increased the limit for initiation of phototherapy and exchange transfusion rates.The aim of this study was to compare the concordance of the Turkish Neonatology Society 2022 Jaundice Guideline and the AAP 2022 latest jaundice guideline in babies born at 35 weeks of gestation and above.

Methods:In this study, only patients hospitalised in our NICU and diagnosed with indirect hyperbilirubinaemia were included. Demographic and laboratory data and risk factors for jaundice were noted.The limits of phototherapy/ exchange transfusion limits during hospitalisation according to both guidelines were analysed.

Results:The mean gestational week of the infants was 37.7+1.43 weeks.ABO incompatibility was present in 21.5% of the patients and Rh incompatibility was present in only 6.1% of the cases.According to the TND 2022 Jaundice guideline, the mean limit for initiation of phototherapy was 15.83+2.46 mg/dL, while this rate was 19.6+2.31 mg/dL for the same infants in the AAP 2022 update ($p<0.001$). While the mean exchange transfusion limit was 20.43+2.43 mg/dL according to the TND 2022 Jaundice guideline, this ratio was 25.76+1.57 mg/dL for the same infants in the AAP 2022 update ($p<0.001$). It was found that 89.2% of the patients were hospitalised in accordance with the TND 2022 Jaundice Guideline, but compliance with the AAP 2022 Jaundice Guideline was 36.6%. When the compliance of the patients with the two guidelines according to the gestational week was analysed in detail, it was observed that 64.4% of the patients had no indication for hospitalisation according to the AAP 2022 Guideline.

Conclusion:This is the first study comparing the so-current jaundice guidelines of two different countries. We believe that each country should determine its own guideline and individualised treatment would be the best.

"None declared".