

Junior Members Forum & Annual RBHSC Lecture

13th February 2014, Royal Victoria Hospital, Belfast

PRESENTATIONS

TEN YEARS ON – HAS DIABETIC KETOACIDOSIS IN CHILDREN CHANGED?

JS Woodside, ECA Stewart, J Dixon

Aims: To compare and contrast diabetic ketoacidosis (DKA) admissions in children to Antrim Hospital in 2000 with 2010. To determine which parameters have changed over 10 years since paediatric diabetes nurses were introduced (post 2000).

Methods: Retrospective analysis of case notes of all children with Type 1 diabetes under 18 years admitted with DKA from 1st January to 31st December in 2000 and 2010.

Results: Attendance at the paediatric diabetic clinic increased by 54% from 107 patients in 2000 to 165 patients in 2010. The percentage attending this clinic admitted with DKA decreased from 12% in 2000 to 6% in 2010. In 2000 there were 44 episodes DKA in 10 existing patients and 3 newly diagnosed patients compared with 23 episodes in 12 existing patients and 2 newly diagnosed patients in 2010. Recurrent DKA occurred in 5 patients in 2000 and 4 patients in 2010 with a total of 36 and 13 episodes respectively. The average HbA1c in existing patients with DKA was 9.9% in 2000, compared with 12% in 2010 with an average overall HbA1c of 8.8% in 2000 and 8.2% in 2010.

Conclusions: Over 10 years, patient numbers have increased, control overall has improved, incidence of DKA has decreased and there are fewer episodes of recurrent DKA. The patients admitted with DKA remain poorly controlled and highlight need for intensive management. The additional support provided by paediatric diabetes nurses has been highly beneficial in preventing DKA. Future structured education programmes and improved public awareness will hopefully lead to a continued reduction in DKA.

RETROSPECTIVE AUDIT: HAS THE USE OF NASAL CPAP IN TERM INFANTS LEAD TO AN INCREASED INCIDENCE OF PNEUMOTHORACES?

Dr J Courtney, Dr S Callaghan, Dr A Verner

Introduction: Spontaneous pneumothoraces can cause respiratory distress in term neonates; incidence 1-2%. The risk increases with resuscitation, CPAP or mechanical ventilation. In RJMH, term infants with respiratory distress are increasingly managed with CPAP. This audit determined

the incidence rate and trend of pneumothorax over 6 years.

Objective: To examine whether nasal CPAP in term infants with respiratory distress causes increased rates of pneumothoraces.

Method: The 113 admissions to RJMH coded with 'pneumothorax' between 1/1/2006 and 31/8/2012 were included. Exclusion criteria were gestation <37 weeks, congenital and pulmonary abnormalities including congenital diaphragmatic hernia and pulmonary hypoplasia. 36 patients remained.

Results: Delivery; 47% elective caesarean section, 19% emergency c/s and 17% instrumental delivery. 75% no resuscitation at birth, 28% respiratory distress following delivery. 50% birth weight >3.5kg. 25% NCPAP prior to developing a pneumothorax. 50% urgent needle thoracocentesis; 39% chest drain insertion. Incidence of term admissions with respiratory distress who subsequently developed a pneumothorax was unchanged between 50/1000 – 150/1000. From 2006-2011 1-2 patients/year who developed a pneumothorax had received CPAP prior to diagnosis. However, in 2012 80% (4) had received prior CPAP. Incidence of RDS and TTN were unchanged. Outcomes; 78% home, 22% transferred.

Conclusion: The incidence rate of pneumothoraces is unchanged. However, use of CPAP was higher in 2012 and the 2012 incidence of pneumothorax was at the upper end of the range. This may explain the anecdotal evidence forming the hypothesis. Notably 66% delivered via c/s. This may be explained by the increased risk of TTN with c/s.

PAEDIATRIC ATTENDANCE AT DELIVERIES – WHEN AND WHY?

Lyndsey Thompson, ST3 Paediatrics (now ST5)

OBJECTIVES: The primary objective of this study is to determine the indications for paediatric attendance at deliveries, and the resuscitation required at all deliveries currently attended. Following the results of this, an updated guideline for paediatric attendance at deliveries will be devised.

STUDY DESIGN: This was a prospective observational study of 100 births, attended by paediatric trainees, in a tertiary care hospital for a three month period between November 2012 and January 2013. A questionnaire was completed by the trainees for each delivery attended, detailing the indication for paediatric presence and resuscitation required.



RESULTS: Information was collected for 100 births attended by paediatric trainees during this period. There was a range of indications for paediatric presence at delivery, with fetal distress being the most frequent (49%). Overall 75% of these deliveries required no intervention by the trainee. Of note, there was a significant difference in the resuscitation required at deliveries of infants with fetal distress present (34% deliveries requiring some form of medical intervention) and those without fetal distress present (0% requiring medical intervention). By using a guideline for paediatric presence at deliveries, attendance at these deliveries would have been reduced by 29%, with none of those deliveries requiring any form of medical intervention.

CONCLUSION: Many deliveries are currently being attended by paediatric trainees, with no intervention being required in the majority of these deliveries. This results in increased paediatric trainee workload, at the detriment of midwifery resuscitation skills and the natural birth process. Through formulation of an updated guideline regarding indications for paediatric presence at deliveries, this could reduce paediatric attendance at deliveries, without compromising patient safety.

POSTNATAL RADIOLOGICAL INVESTIGATIONS IN A DISTRICT GENERAL HOSPITAL – A QUALITY AND SAFETY STUDY

D Leemon , R Verma, K Courtenay, S Mugilan, M Anandarajan

Background & Aims: Follow up, management and communication of results of postnatal ward radiological investigations can have it's difficulties, particularly in district general hospitals. Approximately 1000-1200 radiological investigations are requested per year in our hospital. We noticed that there was a delay in communication of scan

results and there was also no mechanism of identifying workload and whether normal scan results have been communicated to the parents or the GP of the patient

We implemented the following changes

- Introduction of Postnatal Radiological investigation register
- Neonatal Outreach team reviewed scan results (specific time allocated as part of job)
- All printed normal scan results to named Consultant – and letters sent to GP and parents
- Abnormal scan results shown to SpR / Consultant on same day and results acted upon and included in Patient center and ECR

We then audited the process to see if we had improved our communication of results.

Methods: A retrospective study of all the radiological investigation requests was carried out. It looked at the requesting process, documentation, review and communication of results before and after implementation of process changes.

Results: All the normal scan results were communicated to parents and GP within 4 weeks. All abnormal results acted upon within a day of the result.

Conclusions: The strategies implemented have resulted in effective communication, accountability and delivery of safe and high quality care to babies requiring postnatal radiological investigations. These strategies can be implemented in other DGH's with modifications to suit the individual units risks and priorities.



Junior Members Forum & Annual RBHSC Lecture

26th February 2015, Riddell Hall, Belfast

PRESENTATIONS

LUMBAR PUNCTURES IN POSTNATAL WARDS - A QUALITY IMPROVEMENT ACTIVITY

Dr. N.Thompson, Dr. Christine Mcfeely, Rosie Kelly, Dr. Damhnait Cassidy, Dr.Cathy Campbell, Dr. Niamh Lo, Dr. Mugilan Anandarajan

Background : Lumbar puncture (LP) and CSF analysis is a recommended investigation for evaluation of suspected sepsis in neonates (NICE guideline-CG149 August2012).

Prior to January 2014, process mapping for LP in a district general hospital, included clinical evaluation by a senior doctor, transfer from the postnatal to neonatal unit with monitoring for 1-hour post procedure. Documentation is recorded by both clinical teams, with two handovers of information.

Service review was performed following multidisciplinary meetings and a reorganisation plan was devised, aiming to minimise transfer of neonates, thus improving safety and documentation.

3 of the 4 regional neonatal units in NI perform LPs by the same method. Length of admission ranges from 2 to > 12 hours.

Methods: A 'Plan, Do Study Act' (PDSA) cycle was used. The planning stage involved meetings with stakeholders and risk assessment of the proposed change of having LP performed on the postnatal ward. A process map for the new method was trialled. Postnatal staff training was updated in post LP care. Equipment was checked and patient groups advised of parental preferences. When the new system was in place, incident reporting revealed no evidence of adverse outcomes. Rapid cycle audits proved patient safety was not compromised and parent satisfaction improved.

Results: The total number of LPs performed from 1/7/14 to 1/1/15 was 16. No incident reports, significant events, or contamination of CSF was reported. Ongoing service review identified areas of improvement, including patient information leaflets and documentation.

Conclusions : This project proposes that LP can be safely carried out on the postnatal ward, under observation by transitional care nurses. Information leaflets and stickers for clinical notes have been implemented with planned continuous evaluation.

LEARNING FROM ADVERSE INCIDENTS - QUALITY IMPROVEMENT FOLLOWING AN ADVERSE INCIDENT – INTRODUCTION OF POSTNATAL WARD INFORMATION LEAFLETS

Dr C.Campbell, Dr D.Cassidy, Dr S.Lawson, Dr N.Thompson
Dr M.Anandarajan

Background: The Ulster Hospital has approximately 4000 deliveries/year with postnatal checks completed in the postnatal ward by midwives and paediatric team prior to discharge. Verbal advice is routine and had been custom and practice. Following a category 2 adverse incident, the paediatric team reviewed practice after process mapping postnatal infant discharges. Patient families were approached to provide input regarding what advice they would have preferred to have received prior to discharge. Among the suggestions were “general” and “infant with suspected cardiac disorder” discharge leaflets.

Aim: To learn from adverse events locally using clinical leadership, cultural change and standardisation, to make service improvements that enhance the safety of our systems.

The Review Process: Initial review led to meetings with parents and service managers as part of incident reporting and complaints processes. Process mapping then enabled risk and prevention assessment with implementation of immediate operational actions supporting recurrence risk reduction. Establishment of the Working Group with multidisciplinary team input facilitated improvement planning with the design and introduction of information leaflets.

Discussion & conclusion: Adverse incident review and input from The Paediatric Working Group facilitated insight into an area requiring system improvement. This allowed utilisation of the learning potential from the event and resulted in discharge information leaflets, which could be modified for use in other postnatal wards across Northern Ireland.

IMPROVING PATIENT SAFETY BY DEVELOPING A STANDARD PAEDIATRIC AND NEONATAL IN SITU SIMULATION PROGRAMME IN THE ULSTER HOSPITAL AND ACROSS NORTHERN IRELAND

Dr Natalie Thompson, Dr Christine Mc Feely, Dr Laura Mc Conaghey, Dr Danielle Leemon, Dr Carl Harris, Dr Mugilan Anandarajan.

Background and Aims: Resuscitation of the acutely unwell neonate is an important role of the multidisciplinary team.¹



Simulation can bridge the gap between teaching and clinical practice, by improving both technical and non-technical skills.²⁻⁸ The aims are; to embed twice monthly in situ simulations in the Ulster Hospital by June 2016; to improve staff confidence in resuscitation skills by 10% over 6 months; and to improve patient safety by a reduction in critical incidents. Secondary aims are to embed a simulation culture across Northern Ireland (NI) with collaboration between trusts to enable shared learning.

Methods: Simulation leads were identified and a training programme for instructors implemented. Multidisciplinary staff participated in the in situ simulation sessions.

A questionnaire was devised, adapted from recent studies and approved by local stakeholders and ethics committee.^{4,8-11} Participants completed the questionnaire before and after each simulation. The 20 questions are a subjective assessment of simulation experience, clinical and team-working skills. An online simulation network was created to allow for universal access to scenarios, a database of facilities and an online discussion forum.

Results: Results showed significant improvement in multiple domains. For example, in neonatal airway management, participants reported significantly improved self reported confidence scores, measured on a 5-point likert scale (Pre-simulation mean= 2.471, post-simulation mean= 3.57 p=0.0039). Communication with team members also showed significant improvement (pre simulation mean= 3.647, post-simulation mean=4.15, p=0.0177).

Conclusions: Multidisciplinary simulation is an effective method of improving clinical and teamwork skills. Development of a simulation network across NI allows transfer of skills when doctors move trusts and has allowed

simulation leaders to emerge. Using an incident reporting system during simulation, allows for improvements in the actual clinical environment, limiting future errors during real resuscitation.^{7-9,12}

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Abstracts

Annual Out of Town Conference

25th - 26th September 2015, Ballymascanlon House Hotel, Carlingford

PRESENTATIONS**CONTINUOUS SUBCUTANEOUS INSULIN INFUSION (CSII) PUMP THERAPY AUDIT**

V. Vasi, N Flanagan

Background and Aims: Studies have shown that CSII produces consistent glycaemic control over time with an improvement of 5mmol/mol (0.5%) in HbA1c. Bolus insulin doses are given via the CSII with the pump's bolus wizard facilitating accurate variable boluses. CSII gives variable insulin background (basal) infusion rates maintaining a smooth glucose profile. Fewer injections and flexibility brings improved quality of life. We aimed to look at the efficiency of CSII pump in glycaemic control and cost effectiveness by comparing the HbA1c, hypo and hyperglycaemic episodes before and after CSII.

Methods: Data was collected using the web based TWINKLE system and case notes. Online tool csiiaudit.co.uk was used to interpret the results. 50 patients on CSII in the South Eastern trust were included (performed May 2014).

Results: An improvement in HbA1c of 5mmol/mol (0.64%) was noted in patients on CSII pumps. The average HbA1c was 64mmol/mol (8.05%). An increase in admissions with hypoglycaemia was noted with CSII, but all with intercurrent illnesses (viral gastroenteritis). A 21% drop in admissions with hyperglycaemic episodes was noted.

Conclusions: There was improved glycaemic control in patients on CSII pump therapy as illustrated by reduction in HbA1c and admissions with hyperglycaemia. CSII pump therapy proved to be cost-effective. Family education and training should be ongoing and resourced to ensure continued benefits.

AUDIT OF THE MANAGEMENT OF BURNS IN A PAEDIATRIC EMERGENCY DEPARTMENT

Dr Andrea Stobo, Dr Elizabeth Dalzell, Dr Danielle Leemon

Background & aims: Burns are a common cause of attendance to the Emergency Department (ED) and they can have life-long implications. It became apparent during attendance at the British Burns Association's Emergency Management of Severe Burns (EMSB) Course that our management of burns deviated from course guidelines. We aimed to identify variation in order to improve our management.

Methods: A retrospective audit of all cases coded as a burn

or scald in the 6 month period 01/02/2011-31/07/2011 and 01/02/2012-31/07/2012 was carried out using the ED Symphony clinical data system. A gold standard was agreed using the EMSB course teaching and r plastic surgery team recommendations. Standards identified included cooling methods, de-roofing of blisters, dressings, documentation, involvement of the plastic surgeons, follow-up and antibiotic prescription.

Results: There were 107 patients identified in both time periods. 57% (2011) and 46% (2012) had documented cooling of the wound. 29 patients had wounds de-roofed in both time periods. 66% (2011) and 59% (2012) had a description and drawing, 16% (2011) and 29% (2012) had a description and no drawing and 16% (2011) and 8% (2012) used a burns chart. 14% (2011) and 17% (2012) had % Total Body Surface Area (%TBSA) documented. 7.5% (2011) and 8.4% (2012) of patients were admitted. 13% (2011) and 23% (2012) received antibiotics.

Conclusions: Practice is variable and documentation is poor. A planned revision of the department algorithm will highlight the importance of cooling, deroofting and documentation. The introduction of a burns specific flimsy should improve documentation.

PERFORMANCE OF SUPINE SPIROMETRY IN CHILDREN WITH NEUROMUSCULAR DISORDERS- A FEASIBILITY STUDY

Kathryn C.A Ferris, Dara B O'Donoghue, Isobel Douglas, Janine McVeigh, Barbara Maxwell, Michael D Shields

Background and aims: Children with neuromuscular disorders such as spinal muscular atrophy type 2 and Duchenne Muscular Dystrophy develop progressive weakness that can result in nocturnal hypoventilation and need for ventilatory support. We hypothesise that supine spirometry more accurately reflects sleeping ventilatory function than traditional sitting/standing and hence could be a predictor of nocturnal hypoventilation in these children. The aim of the study is to determine the feasibility of performing supine spirometry in the clinic and to compare sitting and supine spirometry.

Methods: We undertook a cross-sectional study within the Respiratory neuromuscular disease outpatient clinics recruiting 15 children (aged 5-21 years). Lung functions tests were performed in the upright position then repeated while supine.



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Results: 73% of our patients were able to perform supine spirometry; 91% were able to perform the tests when supine at an angle of 45-90°. For 27% of our patients it was not feasible to perform supine measurements as they were unable to perform any lung function tests due to weakness or they were unable to lie supine because their wheelchair did not tilt or they required a hoist for transfer out of their wheelchair.

FEV1 and MEPs correlated closely for the sitting and supine positions ($R = 0.910$ and 0.816 respectively).

Conclusion: This preliminary study suggests that it is feasible to perform supine spirometry in patients with neuromuscular disorders in the clinic setting and that there may be a correlation with sitting spirometric values. Future studies should explore this further as well as the relationship between supine spirometry and overnight sleep studies.

A STUDY OF PAEDIATRIC MEDICAL STUDENT SELF-ASSESSED CONFIDENCE AND CLINICAL EXPERIENCE

Kathryn C.A Ferris, Clare Thomson, Kieran McGlade, Michael Stevenson and Dara B O'Donoghue

Background and aims: QUB medical students undertake a 6 week Paediatrics module in 4th year. The aim of this study is to determine students' performance, confidence and experience in Paediatrics.

Methods: 4th year medical students were invited to participate in the study by completing an online survey.

Students were asked to rate their: Confidence in recognising and managing cases, Perceived knowledge of conditions, Confidence in their ability to perform tasks, Exposure to a range of common Paediatric cases was also surveyed.

Results: 50 students completed the survey; 14.3% postgraduate students; 61.2% females. Every module group and hospital site was represented.

The average rating of student confidence in their ability to recognise and manage these cases/conditions was low; cerebral palsy, spina bifida, SVT, unwell neonate, congenital heart disease, cystic fibrosis and developmental delay. 50% or less of students surveyed had exposure to these cases; cerebral palsy, anaemia, coeliac disease, cystic fibrosis, spina bifida, arthritis and scoliosis. Specialties in which students perceived their knowledge to be low include haematology, metabolism, rheumatology, psychiatry and oncology. The tasks that students felt least confident in performing included discussing ethical issues in paediatrics and discussing infant feeds and nutritional requirements.

Conclusions: We identified areas and tasks where students feel their knowledge and abilities are suboptimal. This will guide the paediatric course co-ordinators to target specific specialties to develop new resources including online lectures and interactive cases which will form the new "blended" course commencing in the 2014/15 academic year.

PRESENTATIONS

LYMPHADENOPATHY: STANDARDISING OUR PRACTICE

Kathryn Ferris, Dr Elizabeth Dalzell, Dr Andrew Fitzsimons

Background: There is no guideline for the management of lymphadenopathy in children presenting to RBHSC A&E resulting in uncertainty, over-investigation and inappropriate referrals/reviews. Lymphadenopathy is a common reason for A&E attendance. Lymphadenopathy is frequently caused by infections and is often self-limiting however malignancy needs to be considered. History and examination alone should guide the clinician towards a diagnosis; in most cases investigation is not required. A guideline should help to guide the clinician to when investigation, follow up and referral is required.

Aim: Establish our current practice and develop a guideline for staff working within RBHSC A&E to standardise and improve our practice

Methods: Retrospective chart review using symphony, Search of patients attending the A&E department between 1st January 2014 to 31st December 2014, Diagnosis of Lymphadenopathy, swollen lymph nodes or lymphadenitis. Results documented in our audit proforma

Results: 64 patients attended RBHSC ED with a diagnosis of swollen lymph nodes, generalised lymphadenopathy and lymphadenitis from 1st Jan 2014 -31st Dec 2014. 66% had other signs or symptoms of infection. 47% of the children had blood tests performed and 31% were scanned on their initial presentation to the ED. 56% had formal follow up organised of which 61% were followed up in our ED review clinic.

Conclusions: We have used our results to develop a guideline on the assessment and management of Lymphadenopathy to be used in the RBHSC ED. We hope that this guideline will help to standardise and improve our practice..

VIRTUAL VISITATION IN THE NEONATAL UNIT- IMPROVING PATIENT EXPERIENCE IN A DISTRICT GENERAL HOSPITAL.

Dr Natalie Thompson, Sister Alison Barrett, Stefanie Minnis, Gemma Currie, Dr Mugilan Anandarajan Consultant Paediatrician

Background: Neonatal units within Northern Ireland have restrictions on visiting times and use of mobile technology due to infection control concerns. Siblings and extended family do not get the opportunity to meet the new baby until after discharge. Families can face emotional difficulties, and changes in family dynamics when the newborns are hospitalised for a prolonged period. The aim of this project is to improve family experience, by using telecommunication devices to allow access to family members at home.

Methods: We introduced 'virtual visitation' where parents are able to transmit real time images of their newborn through



a secure portal to their families, via videoconferencing on a trust encrypted IPAD, using confidential passwords. The pilot project was introduced for 6 months in 2015. The initial project involved 20 families and feedback enabled service development. The next phase of the project involves families using the IPAD on a regular basis. An instruction manual was produced and an IPAD stand purchased for ease of use. Staff training helped to improve the extent of the service offered. Formal written feedback is obtained from each family, driving ongoing improvements.

Results In the pilot phase, all parents (n=20) reported positive feedback in terms of improved family morale and sibling relationships. Areas of improvement were addressed including; equipment issues, Internet access problems, availability of the device, and confidentiality.

During the current phase, formal feedback questionnaires are used to determine family satisfaction.

Conclusions Although the project remains in the early stages, we have shown through verbal and written feedback that virtual visitation can be successfully used as a tool to improve parent experience, bonding, enhance family dynamics and improve confidence in the neonatal team.

IMPROVING MATERNAL BREAST MILK USAGE IN THE HIGH RISK NEONATAL POPULATION.

Authors: G Stewart, J Price, U Robinson, S Craig

Background: Maternal breast-milk confers many benefits for the extremely preterm or growth-restricted neonate. In 2013, national benchmarking demonstrated that at Royal Jubilee Maternity Hospital neonatal unit breast milk feeding at discharge was less than half of the UK population average.

Aims: In order to increase maternal breast milk usage at discharge, we focused on increasing rates at day 28 of feeds. We aimed to increase use by 10% over six months.

Methods: The percentage of exclusive maternal breast milk feeds was recorded for babies born at <32 weeks gestation and/or less than 1500 grams at birth. This was noted for days 1, 14 and 28 of feeds and at discharge. A database of results was created and reviewed monthly. Strategies to drive change were implemented, including: 1. Involving breast-feeding coordinator to enhance milk production, 2. Improving access to breast pumps, 3. Distribution of manual expression equipment 4. Multidisciplinary team education.

Results: 110 babies met the population criteria. Rates of maternal milk usage increased on days 1,14 and 28 of feeds during 6 months. By 4 months of intervention, rates at day 28 had increased by 17%. However, there was no improvement in exclusive maternal breast milk use at the time of discharge noted during this 6 months.

Conclusion: An improvement in maternal milk usage for the at risk population, from initiation to day 28 of feeds was achieved. However, maintenance of this beyond day 28 remains a challenge. Further work is required to identify causative factors and consequently implement change.

FLIPPING PAEDIATRICS!

Kathryn C.A Ferris, Clare Thomson, Kieran McGlade and Dara B O'Donoghue

BACKGROUND AND AIMS: In restructuring the Year 4 Healthcare of Children module we wished to develop a course that represented integration between online classroom and ward; blended teaching not blended delivery. The teaching week was restructured and learning content divided into topics. New content was planned to complement and enhance existing talks creating an integrated online provision. Key to this was flipping lectures, putting didactic elements online freeing the face-to-face session for in-depth discussion and case exploration. Aiming to empower students to take responsibility for their own learning. Flipping lectures is a hot topic in medical education and the Healthcare of Children module has paved the way in introducing lecture flipping in Queen's University Belfast.

METHODS: Video cameras were taken to the hospital sites allowing clinicians to fit recording with their schedules. Training a F2 doctor to do recordings freed time for online content building and development given time constraints. Problems with consent and quality of historic media were addressed by filming new materials. Old paper cases were developed into online interactive cases with a greater emphasis on clinical skills and data interpretation.

RESULTS: The new course includes six flipped lectures. An emphasis on integration between online and face-to-face content reflects a truly blended approach. Focus groups with students and lecturers have highlighted the benefits and the difficulties associated with flipping the classroom.

CONCLUSION: Our results guide further development within the module but also have the potential to inform a true blended approach across the curriculum.



Abstracts



Junior Members Forum & Annual RBHSC Lecture

3rd March 2016, Malone House, Belfast

PRESENTATIONS

MULTIPROFESSIONAL IN-SITU SIMULATION: PROMOTING SAFER AND MORE CONFIDENT PAEDIATRIC PRACTICE

Hart C, Thompson A, Bourke T. RBHSC.

Background and aims: In situ simulation is an emerging tool medical in education with demonstrated benefits in quality improvement¹. We report our experience of running multiprofessional in-situ simulations of paediatric emergencies in the clinical areas of a tertiary referral hospital

Method: We deliver regular, unannounced simulated emergencies in various clinical areas involving nursing and medical staff of all grades. In this report we describe the technical requirements and issues that have arisen. We report participant experience based on post event interviews and ward system failures that have been identified.

Results: Delivering ward based high fidelity simulation, including video recording, is feasible. The equipment can be used by medical staff with basic IT skills but without technical support. In the post simulation interview both medical and nursing staff voiced some initial anxiety in taking part. However most participants reported an increase in confidence in their clinical skills and agreed that they would welcome more of this type of training. A number of equipment and drug issues were identified and a written report was provided to the relevant senior staff. For example we identified that 3% hypertonic saline is not available at ward level and takes several minutes to be obtained from PICU.

Conclusions: We believe that multi professional in-situ simulation is feasible, acceptable and can identify systems failures as part of a paediatric quality improvement initiative. We are continuing to conduct and evaluate monthly in situ simulation sessions and would recommend this approach to other units.

NEONATAL IV FLUIDS IN THE PAEDIATRIC SETTING: A NEW AND NECESSARY GUIDELINE

Caroline Hart, Clíodhna Duncan, Andrew Thompson, Peter Crean, David Marshall, Thomas Bourke.

Background: There is currently no regional guideline for the administration of IV fluids in infants less than 28 days old admitted to a paediatric or surgical ward in Northern Ireland. A retrospective audit of these patients in our unit revealed enormous variations in fluid types, volumes and monitoring. We wished to develop an evidence based guideline to address this key gap.

Method: We carried out a literature review to identify current evidence based practice. We obtained guidelines from five paediatric units across the world. The guideline development group used these data to formulate a draft guideline which was circulated for multidisciplinary consultation. NICE subsequently released a guideline on paediatric inpatient fluids¹, which included neonates, and the document was updated accordingly.

Results: Our guideline recommends using 0.9% saline with 10% dextrose as a starting fluid in these patients at volumes increasing from 60ml/kg/day on day one to 150ml/kg/day on day five. In this paper we will present the scientific justification for these recommendations.

Conclusions: Our previous audit data clearly demonstrated that there is an urgent need for a guideline for the administration of IV fluids in infants less than 28 days of age. We believe the guideline described here uses the best available current evidence and consensus approach, and should be considered for use throughout Northern Ireland.





Abstracts

Annual Out of Town Conference

7th - 8th October 2016, Ballymascanlon House Hotel, Carlingford

PRESENTATIONS
IMPLEMENTING A NEONATAL RESUSCITATION RECORD TO IMPROVE DOCUMENTATION DURING PROLONGED RESUSCITATION OF NEWBORN INFANTS.

Dr Natalie Thompson, Dr Elaine Mc Kinley,, Dr Sarah Mc Kee, Dr Danielle Leemon, Dr Bronagh Clarke, Dr Mugilan Anandarajan

Background and Aims: Prolonged neonatal resuscitation (>5 minutes) needs careful documentation. However, the timeline of events is often not accurately recorded, leading to errors in future care and unnecessary litigation. The aim of this quality improvement project is to produce a standard document for prolonged neonatal resuscitation, which can be utilised at the time of resuscitation and form part of the medical notes.

Methods: A baseline audit of current practice was conducted in July 2016. Notes of 10 patients admitted to the neonatal unit who met the criteria were reviewed. Documentation was recorded against a standard adapted from a successful newborn resuscitation document from another UK neonatal unit.^{1,2}

Results: The baseline audit revealed areas of poor documentation in the medical notes; particularly of demographics (80% no patient identifier, n=10), and location of the patient (50% no location, n=10), reassessments (60% incomplete, n=10) and advanced resuscitation measures. The findings were presented to the target group of medical and midwifery staff. Following this multidisciplinary meeting, the document was amended and role of the scribe established. A pilot phase of 2 months for implementation of the document was commenced with ongoing feedback. The document was stored on the resuscitation trolley. A simulation exercise enabled staff training in the use of the document, and identified latent errors.

Conclusion: The baseline audit highlighted areas of concern in terms of inconsistent documentation for infants needing prolonged resuscitation. An initial document has been produced and is currently in the pilot phase. Ongoing work will aim to implement this document within the trust and to clarify the role of scribe during resuscitation.

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EVIDENCE BASED GUIDELINE REDUCES INAPPROPRIATE TREATMENT IN BRONCHIOLITIS - A COMPLETED AUDIT CYCLE

Dr Veena Vasi, Dr Catherine Diamond, Dr Rory Mackle, Dr Thomas Bourke

Background and Aims: Bronchiolitis is the commonest respiratory infection in infancy affecting 10% of all children. We developed an evidence based guideline based on recommendations from NICE and the ‘Bronchiolitis of Infancy Discharge Study’ (BIDS). This guideline emphasised the importance of minimal handling and suctioning, rare pharmacological treatment and a permissive approach to patients with saturations above 90%. Introduction of the guideline was combined with a robust programme of communication and training for relevant medical and nursing staff.

Methods: We carried out a retrospective audit of infants admitted with bronchiolitis before (n=30) and after (n=36) implementation of the guideline in 2015/2016.

Results: The key results are shown in table 1. There was a statistically significant reduction in use of hypertonic saline (p<0.05) and nasopharyngeal suction (p<0.001). Use of salbutamol and adrenaline nebulisers was low and the reduction did not reach statistical significance. No significant difference was seen with regards to duration of stay.

Conclusions: Our completed audit cycle demonstrates that adherence to an evidence based guideline reduces inappropriate treatments and promotes minimal handling. Our small study did not demonstrate a shorter length of stay however we plan to complete a larger surveillance in 2016/2017 to establish if we can recreate the significant reduction in length of stay demonstrated in the BIDS study.

THE RBHSC APP – A NEW AND INNOVATIVE RESOURCE FOR STAFF

Dr Ben McNaughten, Clinical fellow in education and simulation, RBHSC

Background: In February 2016 a printed paediatric starter pack was created to complement material distributed at trust induction. The aim was to provide useful practical information about working in the Royal Belfast Hospital for Sick Children (RBHSC). Although feedback was excellent,



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staff stated that it was lengthy and difficult to access when working.

Methods: A smart-phone web app was therefore developed. The app outlines the members of the various medical teams. It provides links to useful contact numbers and paediatric resuscitation algorithms. There are direct links to websites and users can access guidelines and review articles on common paediatric conditions. Staff can also access the weekly rota and teaching schedule. Following an initial trial period staff were invited to complete an online survey.

Results: The survey revealed that 92% agreed that the app was easy to access with 50% stating that they use it at least

once every three days. The results suggest that the links to contact numbers, resuscitation algorithms and the weekly teaching schedule are of greatest value. Feedback on areas for improvement included 'more contact numbers', and 'maybe an alert system' for new articles. All staff agreed that the app is a useful resource.

Conclusions: Feedback has been very positive. One staff member simply wrote 'I love it!'. By seeking multidisciplinary team input we aim to create a powerful clinical tool accessible to all staff. Proposed future developments include publication on App Store® /Google Play® and exploring the possibility of similar projects in other paediatric units.





Abstracts

Junior Members Forum & Annual RBHSC Lecture

Thursday 9th March 2017, Malone House, Barnett Demesne, Belfast

Oral Presentations

A STRUCTURED INTERVENTION PROGRAMME CAN IMPROVE THE BIOPHYSICAL WELLBEING IN CHILDREN WITH CONGENITAL HEART DISEASE

Dr. Sinead Callaghan, Margaret Louise Morrison, Christopher McCusker, Pascal McKeown, Frank Casey

Background: Improved survival among children with congenital heart disease (CHD) has shifted focus to long-term physical and psychological outcomes. The benefits of an active lifestyle have been well described. This study aims to determine if a structured intervention programme can improve both physical and psychological functioning in children with CHD.

Methods: This is a prospective randomised control trial. Patients aged 5-10 years with CHD were identified and invited to participate. Each patient underwent baseline assessment including biophysical assessments and psychosocial assessments

Patients were then randomised into intervention and control groups. The intervention group attended an education session during which motivational techniques were used to deliver exercise and positive lifestyle advice. They also received an individual written exercise plan. The control group continued with their usual level of care. After 4 months, all participants were reassessed.

Results: 163 recruited, 100 males (61.3%), mean age of 8.4 years (5.3 – 11.5). EST duration mean 5.89 mins (SD 2.02). Actigraph: Average MVPA time 45 mins (SD 27.2). The 'cyanotic palliated' subgroup had significantly shorter EST and lower levels of daily MVPA. This subgroup also scored significantly lower on HrQOL physical wellbeing. There was a significant improvement in performance at peak exercise in the intervention group following the intervention

Conclusions: Overall physical and psychological wellbeing is well preserved in the majority of children aged 5-11 years with CHD. A structured intervention programme significantly improved peak exercise capacity.

AUDIT ON UNEXPECTED ADMISSIONS OF INFANTS GREATER THAN 36 WEEKS GESTATION TO ULSTER HOSPITAL NICU DURING NOVEMBER 2016.

Dr. Danielle Leemon, Dr. David Cummins, Dr. Nita Saxena,

Dr Mugilan Anandarajan

Background: Neonatal intensive care provides a level of care that is both high in cost and low in volume. Admissions of term and near-term infants are a major contributor to workload, not to mention the emotional anxiety caused by separating a mother and new born baby. The aim of this audit was to determine the pattern of potentially avoidable admissions, and the degree of support required by these babies.

Methods: This was a retrospective audit of all babies greater than 36 weeks gestation admitted to NICU during November 2016. All babies greater than 36 weeks and more than 1.8 Kg were included. Those who had a congenital abnormality diagnosed before or after birth were excluded.

Results: 37% of admissions to NICU in 2016 were term babies greater than 37 weeks. In November alone, babies greater than 36 weeks made up 59% of admissions. 71% of these were admitted due to respiratory complications, 80% of them being delivered by C-section. However only 40% required respiratory support. The average length of stay was 6 and a half days. There were no admissions as a result of hypoglycaemia or hypothermia.

Conclusions: 71% of admissions of babies greater than 36 weeks gestation could potentially have been avoided. A transitional care ward for babies requiring NG feeds or respiratory monitoring could reduce this admission rate. This audit needs to be bigger and expanded to other neonatal intensive care units in the province.

STETHOSCOPE HYGIENE ON THE PAEDIATRIC WARD – HOW OFTEN DO YOU CLEAN YOURS?

Dr. Grace Cuddy, Dr. Ben McNaughten, Ms Rachel Henderson, Dr. Carl Harris, Dr. Mugilan Anandarajan

Background: The stethoscope remains one of the most powerful diagnostic tools available to clinicians. However, there is an expanding body of evidence suggesting that stethoscopes may act as vectors for infection. Guidelines advise that stethoscopes should be cleaned after each patient contact. We sought to evaluate trainees' perceptions on how regularly they clean their stethoscopes and to observe practice in the clinical environment.

Methods: We distributed a questionnaire to trainees at local induction asking them how often they cleaned their stethoscope and where they stored it when not working. We



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also observed stethoscope hygiene practice on paediatric ward rounds.

Results: A total of 17 trainees completed the questionnaire. Only five (29%) stated that they clean their stethoscope after every patient. Four clean it more than five times per day and seven clean it between one and five times daily. Most trainees (82%) take their stethoscope home with them. During the period of ward round observation there was a total of 36 patient encounters. Seven of these patients had an individual bedside stethoscope and this was used on five occasions when available. When a personal stethoscope was used this was cleaned before use in 59% of cases (17/29).

Conclusions: Despite only 29% of trainees suggesting that they clean their stethoscope between patients, observation of ward round encounters revealed that this practice occurred more regularly (59% cases). However, there is significant scope for improvement in stethoscope hygiene practice and further education is required to enhance compliance with recommendations.

LESS IS MORE: REDUCING THE NUMBER OF BABY CHECKS CARRIED OUT BY PAEDIATRIC TRAINEES TO IMPROVE TRAINING OPPORTUNITIES.

Dr. A Bell, S. Knox, S. Shah, M.Hogan, W. Clarke, P. McStay

Background: Traditionally baby checks have been carried out by paediatric doctors. Over recent years midwives have increasingly been carrying out these checks and a course is now offered in Queens University Belfast to train to complete these examinations. The Northern Ireland Medical and Dental Training Agency issued guidance to Craigavon Area Hospital that paediatric trainees should not be carrying out large numbers of normal baby checks on the postnatal ward in 2016.

Aim: To reduce the number of baby checks carried out by the paediatric team and encourage a cultural shift towards midwife baby checks on the postnatal ward.

Methods: Meetings were held with the Head of Midwifery to highlight that midwife appropriate baby checks were being carried out by paediatricians. Intervention 1: In July 2016 at the beginning of the day the midwifery team were reminded that there were baby checks suitable for midwives to complete. Intervention 2: In November 2016 the sheet where baby's needing a baby check were recorded were redesigned to highlight midwife appropriate baby checks and those (based on local guidelines) requiring a paediatrician check.

Results: Our interventions have reduced the average number of baby checks carried out by paediatrics from 65 per week to 25 per week (intervention 1) to 19 per week (intervention 2).

Conclusions: These interventions have reduced the number of normal baby checks carried out by paediatric doctors by 70%. These simple interventions could be introduced in other hospitals province wide to increase training opportunities for

paediatric trainees.

ADHERENCE TO NICE GUIDELINES FOR EARLY ONSET NEONATAL SEPSIS – A QUALITY IMPROVEMENT PROJECT

Dr. Martin Hanna, Joseph Clarke, Dr Mary Ledwidge and Dr Damien Armstrong.

Background: In 2012 the National Institute for Health and Care Excellence (NICE) published 'Neonatal Sepsis (early onset): Antibiotics for prevention and treatment'. This project set out to establish how well this guideline was adhered to in Altnagelvin Hospital and identify any areas for improvement.

Method: Thirty neonates screened for early onset sepsis were identified by the microbiology laboratory. The management of these infants were audited using the NICE audit tool. Two Quality Improvement Plan, Do, Study Act (PDSA) cycles were completed to improve adherence.

Result: In Altnagelvin Hospital adherence to the Neonatal Sepsis guideline was generally good. 28 (93%) had correct indications for screening, 30 (100%) had blood cultures and CRPs carried out before commencing antibiotics, 30 (100%) had the right antibiotics and doses prescribed. 23 (77%) had a CRP repeated at the correct interval. However, only 16 (53%) received antibiotics within recommended hour from decision to treat. This was identified as an area for improvement. The first intervention was a discussion with Delivery Suite Staff to ensure adequate stocking of the neonatal trolley. In the following two weeks 71% of screened neonates received antibiotics within one hour. The project was then presented to the Paediatric Staff and the importance of timely antibiotics was reiterated. In the next two weeks 83% had first dose antibiotics within one hour.

Conclusions: Time to antibiotics in early onset sepsis is often delayed by simple factors like poor stocking of equipment and with small changes this has been greatly improved.

POSTER PRESENTATIONS

A SYSTEMATIC REVIEW OF COUGH ASSIST IN NEUROMUSCULAR DISEASE – DOES IT IMPROVE COUGH PEAK FLOW?

Orla Logue, Kate Donnan, Deborah Fleck, Ciara Hughes and Michael D Shields

Background: It is known that physiotherapy Cough Assist (CA) techniques help clear lung secretions during infections in children with neuromuscular disease. It is not known whether CA results in an improvement in Peak Cough Flow.

Methods: We performed a systemic review using MedLine, Embase and Web of Science of relevant cough assist terms in the neuromuscular context with cough peak flow (CPF) as outcome.

Results: The initial 555 papers were culled to 46 relevant publications. These were independent assessed and 19 were deemed suitable at addressing the key question. 7 of the 19

papers described effect sizes and were used in a meta-analysis with Forest Plots. The weighted mean improvement in CPF was 125 L/min (95% CI: 98-151, normal PCF > 250). The remaining papers were reviewed for qualitative evidence of effect which was in the same positive direction.

Conclusion: Cough assist physiotherapy in neuromuscular disease is associated with a major improvement in CPF and moves these children closer to normal cough. Future research is needed to determine how long the benefit lasts and thus how frequently CA should be performed each day.

SURVEY OF PAEDIATRIC HANDOVER PRACTICES IN NORTHERN IRELAND

Dr. Julia Courtney, Dr Gavin Lavery

Background & Aims: Good clinical handover is a vital component of high quality, safe medical care. Handover has been highlighted as a priority by several professional bodies. The National Patient Safety Agency describe handover as 'one of the most perilous procedures in medicine' which can be a 'major contributory factor to subsequent error and harm to patients.' The importance of handover is escalating with changing work patterns and the Royal College of Physicians state that 'establishing standards for handover should be a priority.' Importantly, 'effective communication lies at the very heart of good patient care' and the BMA recommend 'handover champions.' The Safety Forum is focussed on improving professional communication in Northern Ireland as a priority. Methods: A baseline survey of all paediatric trainees in Northern Ireland was conducted. The results are informing further improvement work reflecting the perceptions, concerns and priorities of trainees.

Results: 35% - no formal training on handover, 58% - want regional handover practices changed/improved Morning(8-9am) handover; 12% no formal handover, 15% no structured handover tool, 73% not bleep free, 27% last >30 minutes, 12% no senior presence/ set location, 35% no task list identified. Afternoon/5pm handover; 27% no formal handover,

8% bleep free, 23% no set location, 35% senior supervision and 15% no structured handover tool

Conclusions: The evidence and support are growing for the requirement for systematic improvement based on a standardised, collaborative approach.

APPRECIATION OF CLINICAL EXCELLENCE: THE PREQUEL

Dr Danielle Leemon (ADEPT Clinical Leadership Fellow), Dr Mugilan Anandarajan (Consultant Paediatrician)

Background: Alternative approaches to analysing what has gone wrong to improve safety are emerging in other fields similar to healthcare. The ethos is to focus on what is done well and adapt this behaviour as a team to improve the overall service. This culture is now emerging in healthcare.

Methods: In order to identify excellence we created a postcard to be completed by staff for each other. Staff can use the postcards to nominate a colleague who has achieved excellence, detail how they achieved excellence and what could be done to develop excellence further. The postcards are deposited in a post-box and are collected at intervals. Certificates are created for the nominees who can be add them to their appraisal folders. We ran a pilot of the project in the neonatal unit in a DGH.

Results: 48% of staff completed a staff morale questionnaire prior to starting the pilot. Most people disagreed with the statement "I receive feedback on how I am performing in my job" and neither agreed or disagreed with "My team inspires me to do my best work". 31 cards have been completed and certificates created for each nominee. The project has been received positively.

Conclusions: Next steps are to begin to analyse the themes of excellence that have been identified and begin to adapt them as a team. We hope to roll out this project to the rest of the directorate, then to other paediatric teams regionally and possibly to other specialities.

