

Abstract G240 Table 1 The Rolma Matrices

Rolma 1 Matrix (Rolma 2 domains in brackets)		Diagnosis (Outcome)	
		Optimal	Sub Optimal
Assessment (Management)	Evidence base consistent		Incorrect Application (Clinical skill deficiency)
	Evidence base inconsistent	Experience/expertise	Performance/training issue

The aim of this study was to trial the feasibility of the ROLMA matrices as a methodological frame work to explore the interplay between guidelines and clinical practise.

Method The notes for 100 HI patients were reviewed. The assessing clinician's evaluation and management were assessed for guideline concordance and the eventual outcome was recorded. Qualitative notes were also taken. The ROLMA matrices were applied and linked to the qualitative notes.

Results In this sample the ROLMA matrices did not show a clear relationship between guideline concordance and diagnostic accuracy. The ROLMA matrix did however provide a framework for assessing compliance with guidelines and whether or not non-compliance with guidelines is related to inaccurate assessment or even adverse outcome (Table 2 and 3). Even in this small group the ROLMA matrices provided a mechanism for identifying and categorising guideline non-adherence, and identifying adverse

events so that this can be fed back to clinicians. The data set is particularly informative when combined with qualitative data.

Conclusion The ROLMA matrices provide a conceptual framework to understand the interplay between evidence base, expertise and outcome. They are useful audit tools on a departmental level to categorise guideline non-adherence and relate this to potential adverse events such as, in this study, unnecessary irradiation. The ROLMA matrix shows promise as a tool for a larger study to detect associations between adverse events and clinicians practise.

G241(P) COMPARING USABILITY OF PAEDIATRIC WEIGHT ESTIMATION METHODS

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Aims In acutely ill children, weights are often estimated to calculate drug and fluid dosage. Many methods exist, attempting to balance complexity and accuracy. The most accurate are based on physical measurements, but those commonly used in the UK are based on age alone. In 2011 the Advanced Paediatric Life Support (APLS) recommendations changed from using a single formula to three. Meanwhile the UK Resuscitation Council maintains that complexity increases risks of error and still advocates the single

Abstract G240 Table 2

ROLMA 1		Diagnosis			
		Correct		Incorrect	
		Potential ICI	Minor HI	Potential ICI	Minor HI
Assessment	Evidence base consistent	7	50	2	
	Evidence base Inconsistent		37	1	3

Incorrect Diagnosis Details:

- i. Initial assessment diagnosed CSF Rhinorrhoea incorrectly
- ii. Initial assessment considered NAI senior review decided low risk of NAI.

Minor HI Details:

- i. Incomplete assessment missed key finding that was rapidly spotted during further review initiated by concerned nursing staff (Near miss)
- ii. 2 cases diagnosed as minor head injury but had documented drowsiness

Abstract G240 Table 3

ROLMA 2 (with minor head injuries removed)		Clinical Outcome	
		Optimal	Suboptimal/potentially suboptimal
Management	Evidence base consistent	5 Pt 13 on admission low GCS had normal CT Head Pt 14 > 3 vomits had normal CT Head Pt 20 RTA reduced GCS CT Head normal Pt 76 10 year old amnesia CT Head ordered by CT3 which was normal cons review then home Pt 84 Low GCS CT Head normal	2 Pt 23 Junior thought there was CSF rhinorrhea initial plan for CT Head. Consultant review mechanism inconsistent with clinical findings. Pt 29 FY2 thought NIA therefore admit. Senior review unlikely NAI and minor mechanism and sent patient home
	Not Evidence base consistent	2 Pt 43 child vs car speed 30mph, facial contusion only CT Head indication mechanism. Consultant said no CT Head pt discharged several days later well without issue Pt 64 > 3 vomits admitted rather than CT Head discharged well after period of observation	4 Pt 27 (everything documented as OK but junior and senior wanted pt admitted anyway without stating why.) Pt 24 Initial assessment missed > 5cm haematoma on <1 year old and planned observation nursing staff concern resulted in a rapid re-evaluation finding noted CTH head showed parietal skull fracture. Pt's 48 & 100 – 2 pt's with documented drowsiness or reduced GCS that were sent home neither returned or has had any Leicester based imaging or review.

formula. To date no studies have assessed the crucial human factors affecting ease of use or rates of error. This project aimed to pilot a technique for testing accuracy, speed and user preference (usability) of different methods.

Methods We developed a website (www.pemresearch.org) where participants applied four common weight estimation methods (table 1) to a range of ages. Orders of methods and ages were randomised between each entry. To reflect a real resuscitation scenario, participants were instructed to complete the test as quickly and accurately as possible. Psychological pressure was generated by a visible running timer combined with a leaderboard competition. Subject inter-method variability of speed and accuracy were analysed using one way ANOVA and pairwise t-tests with adjusted p-values.

Results 34 acute paediatric staff completed the test. 74% routinely used the single formula APLS method. Post-test 77% reported the reference table method easiest to use. Both single formula APLS and reference table were significantly quicker to use than other methods ($p < 0.001$ and < 0.001). There was no significant difference detected in accuracy between methods. (table 2)

Conclusions This is a feasible technique of assessing usability. Although in our pilot there was no significant difference in accuracy detected, the time taken to apply each method and preference to use appear related to complexity. This novel method of assessing usability has potential advantages over other such as in-situ real-time simulation, including rapid turnaround and distribution via the internet. We plan to expand this study to a larger sample size and validate against in-situ simulation. After refining the technique we will extend its application to other everyday tools such as clinical decision rules.

Abstract G241(P) Table 1

Method		
	Age range	Formula
Single formula APLS	1–10 years	weight = (age + 4) x 2
Three formulae APLS	<12 months	weight = (0.5 x age in months) + 4
	1–5 years	weight = (2 x age) + 8
	6–12 years	weight = (3 x age) + 7
Modified Best Guess Method	<12 months	weight = (age in months + 9)/2
	1–9 years	weight = (2 x age) + 10
	10–14 years	weight = (4 x age)
Reference table Derived from UK growth data	0–16 years	weight = 50th centile for age and sex

Abstract G241(P) Table 2

	Old APLS	New APLS	BGM	Table
Mean time taken (seconds)	49.55	57.76	55.17	33.68
Accuracy of answers (%)	90.5	94.4	95.8	95.5
Pre quiz normal method n (%)	25 (73.5)	7 (20.6)	1 (2.9)	1 (2.9)
Post quiz preferred method n (%)	4 (11.8)	2 (5.9)	2 (5.9)	26 (76.5)

G242(P) REGULAR EDUCATION AND AUDIT IMPROVES THE MANAGEMENT OF PAIN IN CHILDREN

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Aims All children have the right to appropriate prevention, assessment and control of pain yet the assessment and management of pain in children is often inadequate^{1,2}. We therefore set out to assess

and address problems within our own Paediatric Emergency department (ED) relating to pain management in children because it has been shown that unrecognised and poorly managed pain can become established, severe and difficult to control^{3,4,5}.

Methods We retrospectively audited 100 ED patient records to assess:

1. The proportion of patients that had their pain assessed at triage
2. The use of analgesia against the department's pain protocol

We also conducted a parallel audit to assess the confidence of all ED staff in assessing pain in verbal and pre-verbal children.

The above audits were then repeated following an intervention involving the dissemination of audit data as well as the delivery of teaching sessions that had been designed around our hospital's pain protocol. The sessions were provided for all ED staff and focussed on using the Face, Legs, Arms, Cry, Consolability (FLACC) score and the Wong and Baker (smiley faces) score used in our hospital^{6,7}. In addition laminated score cards were placed in the ED to be used as an aide memoire.

Results 16% of patients in the initial audit had their pain recorded at triage with this rising to 72% following our interventions. In those patients with documented pain scores the use of analgesia was as per the guideline in 100% of cases. We also found that prior to our interventions ED staff were only confident 28% and 84% of the time when assessing pain in pre-verbal and verbal children respectively. Following our educational sessions confidence with regards to pain scoring had risen to 96% and 100% for pre-verbal and verbal children respectively.

Conclusion Our experience suggests that the assessment process is the most important step towards good pain management in children within the ED setting. A programme of regular audit and education is vital for raising awareness and confidence amongst healthcare professionals.

G243(P) A QUALITATIVE STUDY OF THE BARRIERS TO THE PRE-HOSPITAL MANAGEMENT OF ACUTE PAIN IN CHILDREN

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Aims Effective pain management in the pre-hospital setting is gaining traction as a potential key performance indicator by many EMS systems, but historically has been shown to be inadequate, particularly in the paediatric population. This study aimed to identify the barriers, as perceived by a representative national cohort of Advanced Paramedics (APs), to achieving optimal prehospital management of acute pain in children.

Methods A qualitative approach was employed to capture data through two focus group interviews. 16 APs were invited to participate in this study. Both interviews were audio-recorded, transcribed, and analysed using Attridge-Stirling's framework for thematic network analysis. Ethical approval was granted for this study.

Results The global theme "Barriers to the Prehospital Management of Acute Pain in Children" emerged from three organising themes as follows: AP education and training, Current clinical practise guidelines for paediatric pain management, and Realities of pre-hospital practise. Limited exposure to children in the pre-hospital setting, difficulty assessing pain intensity in small children, and challenges in administering oral or inhaled analgesic agents to distressed and uncooperative children were highlighted by participants. Short transfer times to the ED and a "medical" cause of pain