Editorial

Advancing analgesia and sedation for critically ill children

Our feature article in this issue of Pediatric Intensive Care Nursing presents a study of the implementation of Analgesia and Sedation Guidelines in a pediatric intensive care unit (PICU) setting. This article was submitted to PICN by Dr. Claire Magner and colleagues.

The article makes a truly valuable contribution to the advancement of knowledge and practices regarding critically ill children. The authors present (a) a description of guidelines for PICU analgesia and sedation and (b) a rigorous investigation of the guidelines implementation process.

Study results demonstrate that implementation of these guidelines were clearly impactful, leading to improved analgesia and sedation for patients. The authors also highlight challenges confronted in the implementation process, for the benefit of others planning implementation of similar guidelines in a PICU setting.

We congratulate Dr. Magner and her colleagues for their impressive work and for sharing it with PICN readers. This is an excellent example of knowledge translation, where research knowledge has been adapted and implemented for clinical practice, while drawing on research to examine the implementation.

We welcome additional papers from readers; perhaps other implementation experiences – good ones and not-so-good ones – so we can all learn from each other’s experiences. Consider publishing your work with us so our international readership can learn from your experience.

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Introducing PICU Analgesia and Sedation Guidelines, Staff Satisfaction Before and After the Practice Change

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Abstract

Unlike adult ICU settings, evidence to support the effectiveness of analgesia and sedation guidelines has not been established in PICU. Despite this, standardisation of PICU analgesia and sedation practice is endorsed, with an increase in analgesia and sedation guideline use in PICUs evident.

Guideline introduction is challenging, with positive staff attitude acknowledged as a major factor influencing guideline acceptance and adherence. Reports describing acceptance of sedation guidelines by clinical staff do not capture baseline perceptions of analgesia and sedation management and receptiveness to a change in practice, resulting in a possible decrease in satisfaction levels, with implications for guideline adherence remaining unreported.

This study aims to capture the views of PICU doctors and nurses both before and after the implementation of analgesia and sedation guidelines incorporating the Comfort-B distress assessment tool, and explore areas of knowledge strength and weaknesses.

Methodology

A questionnaire survey examined PICU nurses and doctors satisfaction regarding and knowledge of pain and sedation management before, and 12 months after the introduction of standardised analgesia and sedation guidelines.

Results

A significant increase in nurses and doctors satisfaction with analgesia and sedation management after guideline introduction emerged. The majority of PICU staff viewed the guidelines as clinically useful and valuable one year after introduction. Major improvements in pain assessment and sedation assessment were reported. Knowledge strengths and weaknesses were identified.

Conclusion

These findings demonstrate willingness by PICU staff to adopt a standardised approach to analgesia and sedation management, and affirm the clinical utility of this change in practice.
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Introduction

Effective management of sedation and analgesia is a fundamental aspect of Paediatric Intensive Care Unit (PICU) care. While in the adult intensive care setting, use of analgesia and sedation guidelines, algorithms or protocols has been associated with enhanced clinical outcomes (1-3), evidence to support the effectiveness of such guidelines has not been established in the paediatric setting (4-8). Adoption of guidelines to guide analgesia and sedation management is nevertheless endorsed (9-13), and evidence suggests an upward trend in such guideline use in PICUs (11, 14).

Incorporation of analgesia and sedation guidelines in PICU settings is often nurse driven (4-6, 8, 15) albeit with multidisciplinary support. The challenges and barriers associated with changing analgesia and sedation practice has not been exhaustively discussed, despite an acceptance that implementation of clinical guidelines is challenging (14), with major gaps in the evidence around the effectiveness of implementation interventions (16).

As a major factor influencing best-practice guideline implementation is positive staff attitude (17), however there is a lack of published literature concerning the views of PICU staff around standardising analgesia and sedation practice. Where reports of sedation protocols being well received by PICU exist (4, 18), the absence of baseline perceptions of analgesia and sedation management and receptiveness to a change in practice are not captured.

A potential decrease in satisfaction with sedation management after a change in practice could have a major impact on protocol compliance with possible patient care implications. This study aimed to ascertain the views of PICU staff both before and after the implementation of analgesia and sedation guidelines, to explore areas of knowledge strength and weaknesses, and to identify areas in clinical practice which could be improved. The hospital’s Ethics Committee granted approval to conduct this research.

Design

The setting for this study was a 23 bedded, Paediatric Intensive Care Unit (PICU) in a university affiliated tertiary hospital. A before/after survey approach was used to determine PICU staff perceptions of analgesia and sedation practice before and after the introduction of analgesia and sedation guidelines, incorporating the COMFORT Behaviour Scale (COMFORT-B), a validated distress assessment tool measuring pain and distress in PICU patients (19, 20).

The Staff Analgesia and Sedation Questionnaire (SASQ) (See Supplement 1) was designed to elicit demographic information, views and knowledge levels around sedation and analgesia from PICU staff at two time points. Questionnaires were issued to PICU nursing and medical staff 5 months before the standardisation of analgesia and sedation practice (SASQ 1), and again 12 months after the change in practice (SASQ 2). The strategy to standardise PICU analgesia and sedation management involved a two-hour training session for each member of staff on how to use the COMFORT-B assessment tool, and a PICU analgesia and sedation guideline education campaign (see figure 1).
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Figure 1: Strategy for Changing the Approach to Analgesia and Sedation Management in PICU

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>Year 1 Q1</td>
<td>Establish baseline views of PICU staff through audit, administer SASQ (Staff Analgesia and Sedation Questionnaire).</td>
</tr>
<tr>
<td>Year 1 Q1</td>
<td>Host Internationally renowned expert. Facilitate workshops, open lectures, bedside visits and consultations with Analgesia and Sedation Committee.</td>
</tr>
<tr>
<td>Year 1 Q1</td>
<td>Hold Annual Pain and Sedation Awareness Month in the hospital with a particular focus in PICU. Facilitate staff attendance at workshops and lectures.</td>
</tr>
<tr>
<td>Year 1 Q1</td>
<td>Development of Analgesia and Sedation Guidelines and Algorithm.</td>
</tr>
<tr>
<td>Year 1 Q2-Q3</td>
<td>Training on Analgesia and Sedation Guidelines, and using COMFORT-B Scale for all PICU staff.</td>
</tr>
<tr>
<td>Year 1 Q4</td>
<td>Rollout of Analgesia and Sedation Guidelines. Communicate clear message to staff regarding the guidelines and promote adherence.</td>
</tr>
<tr>
<td>Daily</td>
<td>Request COMFORT-B and NRS scores at bedside during ward round to raise profile and enhance adherence to guidelines.</td>
</tr>
<tr>
<td>Daily</td>
<td>Check compliance with guidelines, request feedback and clarify ambiguities at bedside.</td>
</tr>
<tr>
<td>2 weekly</td>
<td>2 weekly teaching rounds to increase awareness and improve knowledge levels.</td>
</tr>
<tr>
<td>1-2 monthly</td>
<td>1-2 monthly Analgesia and Sedation Committee meetings to address any issues, present scenarios and set plans for progression.</td>
</tr>
<tr>
<td>Year 2 Q1</td>
<td>Hold Annual Pain and Sedation Awareness Month in the hospital with a particular focus in PICU. Facilitate staff attendance at workshops and lectures.</td>
</tr>
<tr>
<td>Year 2 Q2</td>
<td>Perform any required amendments to guidelines and raise awareness to all staff of adjustments.</td>
</tr>
<tr>
<td>Year 2 Q3</td>
<td>Audit staff using SASQ to determine any changes in attitudes and level of satisfaction with approach to analgesia and sedation practices in PICU following introduction of guidelines.</td>
</tr>
</tbody>
</table>

Employment of a gatekeeper allowed re-issue of questionnaires to individuals according to their study number to co-ordinate before and after responses. PICU nurses and doctors who were not involved in testing the instrument and anyone who had a role in prescribing and administering analgesia and sedation to PICU patients were considered eligible for inclusion. Items contained in the questionnaire were derived from an extensive literature review and reviewed by a committee comprising a consultant anaesthetist, a consultant Intensivist, senior PICU nurses, the PICU pharmacist, and the Acute Pain Clinical Nurse Specialist.

The questionnaire was divided into 4 sections (see Figure 2);

- **Section A** related to the participants demographic data and background information.
- **Section B**: the ‘Satisfaction Section’ of the questionnaire comprised items with a Likert type scale from 1 (strongly disagree) to 5 (strongly agree).
- **Section C** comprised 22 items relating to current practice in analgesia and sedation management which respondents could annotate if they felt improvements in practice were warranted.
- **Section D**: the ‘Knowledge Section’ of the questionnaire contained 15 statements derived from the literature and the expert panel where confusion and uncertainty exist.
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Table 1 Demographic Data of Respondents

<table>
<thead>
<tr>
<th></th>
<th>SASQ 1</th>
<th>SASQ 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=105</td>
<td>N=94</td>
<td></td>
</tr>
<tr>
<td>Nurses n=93 (76.9%)</td>
<td>n=94 (90.4%)</td>
<td></td>
</tr>
<tr>
<td>Doctors n=12 (42.8%)</td>
<td>n=10 (5.6%)</td>
<td></td>
</tr>
<tr>
<td>Nurse Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff Nurse 77 (73.3%)</td>
<td>Staff Nurse 71 (75.5%)</td>
<td></td>
</tr>
<tr>
<td>Clinical Nurse Manager (CNM) 16 (15.3)</td>
<td>CNM 14 (14.9%)</td>
<td></td>
</tr>
<tr>
<td>Doctor Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultant 4 (3.8%)</td>
<td>Consultant 3 (3.2%)</td>
<td></td>
</tr>
<tr>
<td>Length of PICU Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registrar 8 (7.6%)</td>
<td>Registrar 7 (7.4%)</td>
<td></td>
</tr>
<tr>
<td>Nurses 7 (53.3%)</td>
<td>Doctors 5 (50%)</td>
<td></td>
</tr>
<tr>
<td>0-1yr 9 (9.7%)</td>
<td>10 (11.9%)</td>
<td></td>
</tr>
<tr>
<td>&gt;1yr-5yrs 18 (19.4%)</td>
<td>4 (33.3%)</td>
<td></td>
</tr>
<tr>
<td>&gt;5yrs-10yrs 33 (35.1%)</td>
<td>4 (40%)</td>
<td></td>
</tr>
<tr>
<td>&gt;10yrs 33 (35.1%)</td>
<td>23 (27.4%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 (10%)</td>
<td></td>
</tr>
</tbody>
</table>

**Instrument Testing**

An independent group of PICU nurses and doctors reviewed the questionnaire using a content validity index (CVI). Items which scored an I-CVI of >0.8 were included in the final version of SASQ. A Scale level CVI average value of 0.91 was obtained demonstrating highly valid content within the tool. A pilot test by PICU staff who were not involved in the main study returned a Cronbach’s alpha of 0.69 for Section B, indicating good internal consistency. An overall test retest reliability coefficient of 0.83 was obtained for SASQ verifying the stability of the instrument.

**Data Analysis**

Likert type responses for the ‘Satisfaction Section’ (Section B) were recoded and treated as scale variables. A sum of scores was calculated to allow comparison of means between groups. For Section D; participant responses were rescaled to a percentage.

The independent t test was used to analyse differences in group means. The paired samples t test was used to analyse responses from those who answered both SASQ 1 and SASQ 2. Pearson product-moment correlation or Spearman rank order correlation coefficients were used to explore the strength of relationships between two continuous variables. All reported p-values were two sided, and a value of <0.05 was considered statistically significant.
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Findings
There was a 58% (n=105) response to SASQ 1 and a 51.9% (n=94) response to SASQ 2. The demographic information of respondents is presented in Table 1.
Over half of the nurses responding to SASQ 1 and 2 had over 5 years of PICU experience (SASQ 1 70%, n=66, SASQ 2 62%, n=52). Half of responding doctors at both time points reported to have up to one years’ PICU experience (SASQ 1 58%, n=7, SASQ 2 50%, n=5).

Before and After Analysis
A significant increase in PICU staff satisfaction after the intervention emerged (mean score before 53% (SD 14) mean score after 63% (SD 14.1) (p<0.001). A subset analysis of individuals who answered both SASQ 1 and SASQ 2 is displayed in table 2 (n=67).
Respondents indicated a significant increase in satisfaction after the intervention regarding 4 items, while no significant change emerged regarding the perceived value of a standardised tool for assessing distress in PICU patients (83.6% (n=56) agreed before, 82% (n=55) agreed after, p=0.09).
There was a reduction in the number of respondents who perceived the tool combined with guidelines as valuable in managing patients in PICU, declining from 92.5% (n=62) to 81% (n=53) (p<0.001).

Table 2 Comparison of Satisfaction with Analgesia and Sedation Management Before and After Intervention

<table>
<thead>
<tr>
<th></th>
<th>SASQ1 Agree n (%)</th>
<th>SASQ 2 Agree n (%)</th>
<th>t value</th>
<th>SD</th>
<th>Mean Difference</th>
<th>(95% CI) Range of Difference</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>With current approach to managing A&amp;S in PICU</td>
<td>18 (26.9%)</td>
<td>40 (59.7%)</td>
<td>-6.1</td>
<td>1.1</td>
<td>-0.82</td>
<td>0.6-1.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Current methods for assessing distress in PICU</td>
<td>21 (31.3%)</td>
<td>47 (70.1%)</td>
<td>-5.5</td>
<td>1.3</td>
<td>-0.9</td>
<td>0.6-1.2</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Current weaning strategies from A&amp;S</td>
<td>15 (22.4%)</td>
<td>28 (41.8%)</td>
<td>-3.2</td>
<td>1.4</td>
<td>-0.55</td>
<td>0.2-0.9</td>
<td>0.002</td>
</tr>
<tr>
<td>Current methods of evaluating over/undersedation</td>
<td>11 (16.4%)</td>
<td>36 (53.7%)</td>
<td>-5.9</td>
<td>1.2</td>
<td>-0.84</td>
<td>0.6-1.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Standardised distress assessment tool would be/is valuable in PICU</td>
<td>56 (83.6%)</td>
<td>55 (82.1%)</td>
<td>1.8</td>
<td>1.1</td>
<td>0.24</td>
<td>0.0-0.5</td>
<td>0.09</td>
</tr>
<tr>
<td>Assessment tool combined with guidelines would be/is valuable in PICU</td>
<td>62 (92.5%)</td>
<td>53 (79.1%)</td>
<td>3.6</td>
<td>1.1</td>
<td>0.46</td>
<td>0.2-0.7</td>
<td>0.001</td>
</tr>
</tbody>
</table>

*Analysis performed using Paired t Test

There was a mean reduction in areas requiring improvement (mean 8.8 items before, (SD 4.5), 5.7 items after (SD 3.8) after (p<0.001) (see table 3 for item list and responses).
The areas where the most significant improvements occurred after the intervention included the assessment of pain and sedation, the tools available to do this and the prioritisation of sedation (p <0.001).
Over half of respondents felt that analgesia was weaned too rapidly (68.6% (n=72) before, and 63.8% (n=60)), and a significant number had the same concern regarding sedation (47.6% (n=50), before, and 41.5% (n=39) after). Conversely around a quarter of respondents indicated concern regarding nurses’ unwillingness to wean sedation (24.8%, n=26) and this increased after the intervention by 5% (29.8%, n=28).

Regarding knowledge levels, the median percentage correct scores for SASQ 1 was 68.3% (61.7-72.5) and 68.4% (63.2-73.7) for SASQ 2 for both doctors and nurses. Table 4 gives the responses to the statements regarding analgesia and sedation.

### Table 3 Items Identified as Requiring Improvement Before and After Intervention

<table>
<thead>
<tr>
<th>Item (abbreviated)</th>
<th>SA SQ 1 (n=105)</th>
<th>SA SQ 2 (n=94)</th>
<th>*Sig (2 tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Lack of sedation assessment tools</td>
<td>Indicated Concern (n) 69 (65.7%)</td>
<td>Indicated Concern (n) 13 (13.8%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>3. Lack of pain assessment tools</td>
<td>59 (56.2%)</td>
<td>7 (7.4%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>2. Sedation assessment</td>
<td>64 (60%)</td>
<td>19 (20.2%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>1. Pain assessment</td>
<td>60 (57.1%)</td>
<td>20 (21.3%)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>6. Lack of prioritisation of sedation</td>
<td>40 (38.1%)</td>
<td>16 (16.9%)</td>
<td>0.003</td>
</tr>
<tr>
<td>5. Lack of prioritisation of pain</td>
<td>46 (43.8%)</td>
<td>27 (28.7%)</td>
<td>0.058</td>
</tr>
<tr>
<td>19. Inconsistency at consultant level</td>
<td>75 (71.4%)</td>
<td>53 (56.4%)</td>
<td>0.54</td>
</tr>
<tr>
<td>16. Overuse opioid infusions</td>
<td>21 (20%)</td>
<td>5 (5.3%)</td>
<td>0.03</td>
</tr>
<tr>
<td>21. Lack of alternative agents prescribed</td>
<td>51 (48.6%)</td>
<td>34 (36.2%)</td>
<td>0.33</td>
</tr>
<tr>
<td>7. Over-administration analgesics</td>
<td>28 (27.8%)</td>
<td>16 (17%)</td>
<td>0.19</td>
</tr>
<tr>
<td>15. Underuse of opiate infusions</td>
<td>13 (12.4%)</td>
<td>2 (2.1%)</td>
<td>0.02</td>
</tr>
<tr>
<td>8. Over-administration sedation</td>
<td>31 (29.5%)</td>
<td>22 (23.4%)</td>
<td>0.47</td>
</tr>
<tr>
<td>10. Sedation weaned too rapidly</td>
<td>50 (47.6%)</td>
<td>38 (41.5%)</td>
<td>0.71</td>
</tr>
<tr>
<td>11. Delayed weaning of analgesia</td>
<td>41 (39%)</td>
<td>32 (34%)</td>
<td>0.23</td>
</tr>
<tr>
<td>9. Analgesia weaned too rapidly</td>
<td>72 (68.6%)</td>
<td>60 (63.8%)</td>
<td>1.0</td>
</tr>
<tr>
<td>22. Non-pharmacological methods not used</td>
<td>53 (50.5%)</td>
<td>44 (46.8%)</td>
<td>0.35</td>
</tr>
<tr>
<td>14. Overuse continuous sedation infusions</td>
<td>16 (16.2%)</td>
<td>11 (11.7%)</td>
<td>0.41</td>
</tr>
<tr>
<td>13. Underuse continuous sedation infusions</td>
<td>24 (22.9%)</td>
<td>19 (20.2%)</td>
<td>1.0</td>
</tr>
<tr>
<td>17. Not using sedative drug holidays</td>
<td>30 (27.6%)</td>
<td>28 (29.8%)</td>
<td>0.29</td>
</tr>
<tr>
<td>12. Delayed weaning of sedation</td>
<td>28 (26.7%)</td>
<td>23 (24.5%)</td>
<td>0.06</td>
</tr>
<tr>
<td>18. Nurses unwillingness to wean analgesia</td>
<td>10 (9.1%)</td>
<td>18 (19.1%)</td>
<td>0.08</td>
</tr>
<tr>
<td>20. Nurses unwillingness to wean sedation</td>
<td>30 (27.6%)</td>
<td>28 (29.8%)</td>
<td>0.83</td>
</tr>
</tbody>
</table>

*Analysis performed using Chi Square test*
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The majority of respondents (71.2% (n=75) before and 86.2% (n=81) after) correctly indicated morphine infusions should be used with great caution in neonates (item C7). An increased knowledge that COMFORT-B was validated in neonates was shown, with 51.4% (n=54) of respondents before, and 62% (n=58) of respondents after agreeing with this statement.

Uncertainty was shown regarding the requirement for a patient with an open sternum to have additional analgesia 64.8% (n=68) of SASQ 1 and 54.3% (n=51) of SASQ 2 respondents agreeing with this statement, despite an absence of evidence to support this statement in the literature.

Approximately half of the respondents disagreed that patients on CVVH or ECMO do not require additional analgesia and/or sedation (SASQ 1 =50%, SASQ 2=53.2%), even though evidence that significant absorption of these drugs by external circuits occurs (21).

A high level of uncertainty was shown in relation to the proven neurotoxic effects of some analgesics and sedatives including ketamine in juvenile animal models; with 47% of SASQ 1 and 53% of SASQ 2 respondents neither agreeing nor disagreeing with this statement.

Discussion

An overwhelmingly positive receptiveness to adopting a more consistent approach to assessing and managing patient distress in the PICU was demonstrated by this study. After the intervention there was a significant increase in satisfaction with analgesia and sedation management, assessing pain and distress, weaning analgesics and sedatives and evaluating under and oversedation. This increase in satisfaction among PICU staff is consistent with the view that a sedation treatment algorithm together with a delegation of decision-making authority to nurses increases patient comfort and is more satisfying for physicians and nurses (18). This also correlates with research suggesting autonomy is strongly linked to nurses’ work motivation and job satisfaction (22).

The COMFORT-B tool remained valued by the majority of respondents 12 months after its introduction. Bedside nurses are astute observers of patients’ responses and the effectiveness of their interventions (23). A high satisfaction rate exemplifies the utility of the COMFORT-B tool and pain and sedation guidelines clinically.

However all expectations may not have been met as 20% fewer respondents indicated satisfaction with COMFORT-B combined with the analgesia and sedation guidelines in SASQ 2 compared to SASQ 1. This may be due to the nursing time involved in administering COMFORT-B; each assessment requiring a 2 minute observation period where the PICU nurse refrains from other activities. A shorter observation period of 30 seconds duration was found to be synonymous with underscoring patients’ pain (24), reinforcing the importance of observing the indicated observation period. It is well acknowledged that observational assessment of distress in PICU is challenging.
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COMFORT-B assessment reflects a moment in time, hence there is a requirement for additional, objective and validated monitoring tools to measure PICU patient distress, such as skin conductance or near infra-red spectroscopy.

While strong engagement with continuing education was evident from nursing respondents, nearly half of doctors who responded reported less than 6 months of PICU experience reflecting the pattern of training rotation, and a third indicated no previous education on pain and sedation. The majority of doctors (58.3%, n=7) cited anaesthesia as their specialty, as the safe delivery of anaesthesia to patients is a major role of this specialty; proficiency with agents used for analgesia and sedation may be assumed.

After the intervention there was less concern regarding the prioritisation and assessment of pain and sedation, and the inappropriate use of opioid infusions. Furthermore the study revealed a reduction in concern regarding inconsistency in practice at consultant level after guideline introduction. The wide variability in PICU analgesia and sedation practices is not new (11, 16). The use of several drug classes, multiple agents, large variations in the doses, frequency and routes of administration, off-label use of analgesic drugs, or untested drug combinations are reported to be routinely seen in clinical practice, often driven by local culture or individual preferences (25).

Given the significant patient complications associated with practice variation in opioid analgesia use, including oversedation, respiratory depression, hypotension and opioid withdrawal (26), it is welcome that the change in practice was some consistency in the practice patterns of clinicians. Conversely some areas that require a clinical focus emerged.

While a concern remained regarding the rapid weaning of analgesia and sedation, a concern also remained over delayed analgesia and sedation weaning. Proportionally more doctors than nurses felt that nurses could be more proactive in weaning analgesia. Research suggesting PICU nurses may be more engaged with patient comfort and less focussed on length of patient stay (4), offers some explanation for this anomaly. Consistent with this finding, 75% (n=3) of physicians in a Canadian PICU surveyed associated use of a sedation protocol with over-sedation of patients (18).

Subjects responded similarly to the knowledge items in section D of the guidelines on both occasions; despite a 17 month time period between surveys. This is not uncommon in before/after surveys (27). Furthermore, education regarding pain management does not always result in a change in behaviour (28).

As research confirms neuroapoptosis in rodents exposed to morphine, midazolam, propofol or high doses of ketamine in the newborn period (29, 30), the current study reinforced the need for an education focus to emphasise the potential adverse effects of analgesic and sedative agents; and promotion of analgesia and sedation guidelines that endorse the judicious use of these agents while maintaining patient comfort.

Good awareness of the unique analgesia and sedation needs of the neonate was evident in the current study. This is welcome as painful experiences combined with the multiple sources of stress in critical care have significant consequences on the neurodevelopment of this vulnerable population (31).
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There was uncertainty regarding the analgesic and sedative needs of patients on external circuits with around half respondents on both occasions disagreeing that a patient receiving CVVH or ECMO should not require additional analgesia. Although circuit drug absorption can necessitate supplementary sedative and opiate administration (32), individual patient assessment rather than a blanket approach is advised (21). The analgesic needs of a patient with an open sternum also elicited uncertainty, which is mirrored by a paucity of published evidence. While it is established that delayed sternal closure after cardiac surgery is synonymous with a more complex post operative recovery that those who have primary sternal closure (33), there is no evidence confirming whether any increased analgesic or sedative requirement derives from a greater severity of illness or increased wound pain.

Table 4 Responses to Knowledge Section of SASQ 1 and SASQ 2

<table>
<thead>
<tr>
<th>Statement</th>
<th>SASQ 1 N=105</th>
<th>SASQ 2 N=94</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients who are not treated appropriately for pain are vulnerable to stressors such ICU psychosis.</td>
<td>98 (93.3%)</td>
<td>91 (96.8%)</td>
</tr>
<tr>
<td>In assessing the agitated patient it is important to consider physiological aetiologies, e.g. hypercapnia and hypoxia.</td>
<td>94 (89.5%)</td>
<td>85 (90.4%)</td>
</tr>
<tr>
<td>A neonate has less ability to sense and interpret pain than an adult.</td>
<td>11 (10.5%)</td>
<td>6 (6.4%)</td>
</tr>
<tr>
<td>Morphine infusions should be used with great caution in neonates, particularly those under 28 weeks gestation.</td>
<td>94 (89.5%)</td>
<td>81 (86.2%)</td>
</tr>
<tr>
<td>Some sedatives including ketamine have been shown to damage the developing animal brain in animals as they are neurotoxic.</td>
<td>47 (44.8%)</td>
<td>41 (43.6%)</td>
</tr>
<tr>
<td>Pain can be effectively assessed using patients’ facial expression alone.</td>
<td>11 (10.5%)</td>
<td>11 (11.7%)</td>
</tr>
<tr>
<td>It is not necessary to ensure adequate patient sedation when administering neuromuscular blocking agents such as pancuronium.</td>
<td>11 (10.5%)</td>
<td>11 (11.7%)</td>
</tr>
<tr>
<td>A patient with an open sternum requires additional analgesia.</td>
<td>68 (94.8%)</td>
<td>51 (54.3%)</td>
</tr>
<tr>
<td>A patient receiving CVVH or ECMO should not require additional analgesia and/or sedation to compensate for that lost in the circuit.</td>
<td>24 (22.9%)</td>
<td>14 (14.9%)</td>
</tr>
</tbody>
</table>
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Limitations
Doctors at Registrar level who completed the SASQ 1 were no longer working in the PICU when SASQ 2 was administered. Nevertheless, an equally valuable set of responses were obtained from a different complement of registrars in SASQ 2. This was not a randomised study; therefore other concomitant factors may have influenced the results. However, during the study, changes to staff were otherwise minimal and no other significant changes in practice occurred.

Conclusions
A significant increase in PICU nurse and doctor satisfaction with analgesia and sedation practice one year after the intervention was demonstrated. Without endorsement of these staff; a successful change in practice was unlikely to occur. Concerns regarding inconsistent approaches to weaning analgesia and sedation emerged as well as uncertainty regarding tolerance and physiological dependency. Amid concerns regarding the neurotoxic effects of some analgesic and anaesthetic agents; basing drug administration on clinical need rather than on habit or personal preference is crucial. The use of evidence based guidelines to guide clinical decisions in practice underpins high quality patient care and enhances patient outcomes. Adopting such a strategy in relation to analgesia and sedation has shown to be welcomed and valued by clinical staff, and opened the door to further much needed PICU based analgesia and sedation research.

References
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References


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References


The MICE-ICU Erasmus+ Project 2016-2018

One of the goals in the MICE ICU project was to develop an E-module accessible to all Critical Care Nurses in Europe and abroad.
During the test period May to August 2018, more than 120 nurses participated and took the course. Some amendment was done after the test period and it was opened to everyone through a link on the MICE-ICU and EfCCNa website in November 2018.
The E-learning course is now available in 4 different languages: English, Polish, Slovenian and Czech.

More than 100 nurses have logged in and started the course since it was published. A few of the nurses who have taken the course came from countries outside Europe. Everyone who finish it and have more than 70% of correct answers in the final test gets a certificate.

Multicultural Care is currently a hot topic in Europe and it was part of the program at the last EfCCNa conference in Ljubljana this year. The next step is to disseminate the MICE-ICU project at the Scandinavian Congress NOKIAS in Reykjavik later this spring.

Currently the group is writing on their second article for the project. Beata Dobrowolska from Poland is the leading person with the help from the project members.

The first article on the topic was an editorial in Nursing in Critical Care published in 2017.
The FLOW Study

We are interested in the views of those who have implemented a weaning protocol for ventilation.
We would be grateful if YOU would complete this questionnaire if you were involved in weaning protocol implementation at your hospital/facility.
We kindly ask that you also forward this link to ANY INDIVIDUALS who were involved in weaning protocol implementation (including those in your facility) and invite them to complete the questionnaire.
This is the link to the short survey: https://delphimanager.liv.ac.uk/FLOW/
The questionnaire takes 10 minutes to complete.

We thank you in advance for your participation!
These results will help us identify the best practice for implementing weaning protocols.

Thank you,
The Facilitators Of Weaning (FLOW) team
Matthew Henderson, Researcher, Queen’s University of Belfast
Prof Bronagh Blackwood, Queen’s University of Belfast
Dr Joanne Jordan, Queen’s University of Belfast
Prof Louise Rose, King’s College London
Dr Karen E. A. Burns, St. Michael’s Hospital and the University of Toronto

The World Hand Hygiene Day - Save Lives: Clean your Hands

World Hand Hygiene Day has been celebrated on May 5th.
Are you aware of the link between hand hygiene, infection prevention and sepsis?

Although 80% of sepsis cases are contracted outside of the hospital, hand hygiene plays a critical role in the prevention of infections, and therefore the prevention of sepsis.
Consequently, the WHO and the GSA urge all healthcare institutions, all health workers, as well as all policymakers and other stakeholders to not underestimate the relationship between hand hygiene, infection prevention, and sepsis. Sepsis is estimated to affect more than 30 million patients every year worldwide, and global rates of sepsis are thought to be growing rapidly.
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Upcoming Congresses (click on the picture to get linked)

IPSSW2019
11th International Pediatric Simulation Symposia and Workshops
TORONTO CANADA  |  20 - 22 MAY

Save the Date for ESPNIC 2019
June 18-21, 2019, Salzburg, Austria

10TH CONGRESS OF THE
WORLD FEDERATION OF
PEDIATRIC INTENSIVE &
CRITICAL CARE SOCIETIES

14-17 June, 2020

4th International Multidisciplinary
Paediatric and Neonatal Acute and
Critical Care Research School

Save the dates:
Thursday 25th & Friday 26th July 2019
Bristol City Centre
Instructions for Authors

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Manuscripts must be written in English; either American or British spelling may be used but must be consistent throughout. Manuscripts should be typed double-spaced, using Arial or Times New Roman font in at least 11-point, with margins of at least 2 cm or 1 inch. Number pages consecutively beginning with the title page. The preferred length for research, clinical and review papers is 1000-2500 words, excluding references. Submissions to Spotlight on PICU should not exceed 1500 words. The sections of the manuscript should be in the following order.

Title page
- Title should be concise and informative, and typed in bold capitals.
- Names (first name, initial(s) and family names) of authors in the order in which they are to appear.
- Include a maximum of 4 qualifications for each author
- Institutional affiliation(s) of each author
- Address, telephone and fax numbers and email address of corresponding author

Abstract
An abstract not exceeding 250 words is required for all submissions except those for Spotlight on PICU. For research studies, the abstract should be structured under the following headings: Background, Methodology, Results (or Findings), Conclusions.

Body of text
Use headings to structure the paper. The type of paper will determine the headings, e.g. for research papers the main headings will be Introduction, Background, Methodology/Methods, Results/Findings, Discussion, Conclusion. Up to 2 levels of headings may be used. Papers reporting research conducted in humans or animals should include a statement that the study was approved by the relevant body or bodies.

References
The list of references should only include works that are cited in the text and that have been published or accepted for publication. References such as "personal communications" or "unpublished data" cannot be included in the reference list, but can be mentioned in the text in parentheses.