MEMORANDUM FOR SGOBV
ATTN: MAJ CHRISTOPHER MONNIKENDAM

FROM: 59 MDW/SGVU

SUBJECT: Professional Presentation Approval

1. Your paper, entitled *Early Hypernatremia is Associated with Increased Mortality in Extremely Low Birth Weight (ELBW) Infants* presented at/published to *Pediatric Academic Societies Meeting, Baltimore, MD 30 APR 2016 – 3 MAY 2016* with MDWI 41-108, and has been assigned local file #16189.

2. Pertinent biographic information (name of author(s), title, etc.) has been entered into our computer file. Please advise us (by phone or mail) that your presentation was given. At that time, we will need the date (month, day and year) along with the location of your presentation. It is important to update this information so that we can provide quality support for you, your department, and the Medical Center commander. This information is used to document the scholarly activities of our professional staff and students, which is an essential component of Wilford Hall Ambulatory Surgical Center (WHASC) internship and residency programs.

3. Please know that if you are a Graduate Health Sciences Education student and your department has told you they cannot fund your publication, the 59th Clinical Research Division may pay for your basic journal publishing charges (to include costs for tables and black and white photos). We cannot pay for reprints. If you are 59 MDW staff member, we can forward your request for funds to the designated wing POC.

4. Congratulations, and thank you for your efforts and time. Your contributions are vital to the medical mission. We look forward to assisting you in your future publication/presentation efforts.

   Linda Steel-Goodwin

   LINDA STEEL-GOODWIN, Col, USAF, BSc
   Director, Clinical Investigations & Research Support

Warrior Medics – Mission Ready – Patient Focused
INSTRUCTIONS
USE ONLY THE MOST CURRENT 59 MDW FORM 3039 LOCATED ON AF E-PUBLISHING

1. The author must complete page two of this form:
   a. In Section 2, add the funding source for your study (e.g., 59 MDW CRD Graduate Health Sciences Education (GHSE) (SG5 C&M); SG5 R&D; Tri-Service Nursing Research Program (TSNRP); Defense Medical Research & Development Program (DMRDP); NIH; Congressionally Directed Medical Research Program (CDMRP); Grants; etc.)

   b. In Section 2, there may be funding available for journal costs. If your department is not paying for figures, tables, or photographs for your publication. Please state "YES" or "NO" in Section 2 of the form, if you need publication funding support.

2. Print your name, rank/grade, sign and date the form in the author's signature block or use an electronic signature.

3. Attach a copy of the 59 MDW IRB or IACUC approval form for the research related study. If this is a technical publication/presentation, state the type (e.g. case report, QA/QI study, program evaluation study, informational report/briefing, etc.) in the "Protocol Title" box.

4. Attach a copy of your abstract, paper, poster and other supporting documentation.

5. Save and forward, via email, the processing form and all supporting documentation to your unit commander, program director or immediate supervisor for review/approval.

6. On page 2, have your unit commander, program director or immediate supervisor:
   a. Print their name, rank/grade, title, sign and date the form in the approving authority's signature block or use an electronic signature.

7. Submit your completed form and all supporting documentation to the CRD for processing (59crdpubsreqs@us.af.mil). If you have any questions or concerns, please contact the 59 CRD Publications and Presentations Section at 292-7141 for assistance.

8. The 59 CRD/Publications and Presentations Section will route the request form to clinical investigations, 502 IISG/1AC (Ethics Review) and Public Affairs (59 MDWPA) for review and then forward you a final letter of approval or disapproval.

9. Once your manuscript, poster or presentation has been approved for a one-time public release, you may proceed with your publication or presentation submission activities, as stated on this form. Note: For each new release of medical research or technical information as a publication/presentation, a new 59 MDW Form 3039 must be submitted for review and approval.

10. If your manuscript is accepted for scientific publication, please contact the 59 CRD/Publications and Presentations Section at 292-7141. This information is reported to the 59 MDW/ICC. All medical research or technical information publications/presentations must be reported to the Defense Technical Information Center (DTIC). See 59 MDW 41-108, Presentation and Publication of Medical and Technical Papers, for additional information.

NOTE: All abstracts, papers, posters, etc., should contain the following disclaimer statement:
"The views expressed are those of the [author(s)] [presentser(s)] and do not reflect the official views or policy of the Department of Defense or its Components"

NOTE: All abstracts, papers, posters, etc., should contain the following disclaimer statement for research involving humans:
"The voluntary, fully informed consent of the subjects used in this research was obtained as required by 32 CFR 219 and DODI 3216.02_AFI 40-402."

NOTE: All abstracts, papers, posters, etc., should contain the following disclaimer statement for research involving animals, as required by AFMAN 40-401_IP:
"The experiments reported herein were conducted according to the principles set forth in the National Institute of Health Publication No. 80-23, Guide for the Care and Use of Laboratory Animals and the Animal Welfare Act of 1966, as amended."
Early hypomagnesemia is associated with increased mortality in Extremely Low Birth Weight (ELBW) infants.
The poster presentation is approved.
Early Hypernatremia is Associated with Increased Mortality in Extremely Low Birth Weight (ELBW) Infants

Christopher Mannikendam MD, Thornton Ma MD, Nicholas Carr DO, Stephen Barabara MD, Christine Aune MD, and Kaashif Ahmad MD

1 Department of Neonatology, San Antonio Military Medical Center, San Antonio, Texas; 2 Pediatric Medical Group, San Antonio, Texas

**Background:**
ELBW infants are at high risk for increased serum sodium levels and associated complications. Early fluid restriction in these preterm infants is associated with decreased mortality and morbidity. Hypernatremia is often targeted in the first 24 hours of life.

**Objective:**
To investigate the relationship between mean serum sodium levels in the first 3 days of life and mortality in ELBW infants from 2004 to 2006.

**Design/Methods:**
Using a retrospective cohort design, we identified a subset of NICU infants who had serum sodium levels. We included infants with a gestational age of less than 30 weeks and birth weights below 1000 grams. Infants were excluded if they had chronic lung disease, congenital heart defects, or other severe medical conditions.

**Results:**
Infants with severe hypernatremia tended to be younger and smaller, and have lower APGAR scores and lower risk of developing NEC. The group was divided into those with lower sodium levels and those with higher sodium levels. No significant difference was found in mortality between the two groups.

**Conclusions:**
In our sample population, we found that average serum sodium levels within the first 3 days of life in ELBW infants outside the normal range are associated with increased mortality. This association was still present in a subgroup analysis of 24 and 25 week gestation infants. Further studies are warranted to evaluate the clinical relevance of this association.

**Future Directions:**
- Initial serum sodium levels as prognostic indicators of ELBW mortality
- Serum sodium levels and outcomes in relation to gestational age, birth weight, and weight change over the first 5 days of life
- Additional studies are ongoing to investigate the clinical relevance of these associations.

For additional information please contact: Christopher Mannikendam, MD, FAAP
Department of Neonatology, San Antonio Military Medical Center, San Antonio, TX
christopher.mannikendam.mil@mail.mil

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**Table 1: Serum Sodium vs Outcomes Gestational Age**

<table>
<thead>
<tr>
<th>Serum Sodium (mg/dL)</th>
<th>Sum of Weeks In Hospital</th>
<th>Total Subjects</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;125</td>
<td>125-154</td>
<td>154-184</td>
<td>184-204</td>
</tr>
<tr>
<td>33.3</td>
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<td>20.3</td>
<td>10.6</td>
<td>18.4</td>
<td>51.7</td>
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<td>7.7</td>
<td>12.5</td>
<td>14.9</td>
<td>7.1</td>
</tr>
<tr>
<td>12.9</td>
<td>22.2</td>
<td>21.6</td>
<td>10.4</td>
</tr>
</tbody>
</table>

**Table 2: Serum Sodium vs Outcomes Gestational Age 24 weeks**

<table>
<thead>
<tr>
<th>Serum Sodium (mg/dL)</th>
<th>Total Subjects</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;125</td>
<td>125-154</td>
<td>154-184</td>
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</tr>
<tr>
<td>12.9</td>
<td>22.2</td>
<td>21.6</td>
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</tbody>
</table>

**Table 3: Serum Sodium vs Outcomes Gestational Age 28 weeks**

<table>
<thead>
<tr>
<th>Serum Sodium (mg/dL)</th>
<th>Total Subjects</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;125</td>
<td>125-154</td>
<td>154-184</td>
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<tr>
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<tr>
<td>12.9</td>
<td>22.2</td>
<td>21.6</td>
</tr>
</tbody>
</table>

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**Inclusion/Exclusion Algorithm**

**Demographics**

- **Sample Size:** 3
- **Gender:**
  - Female: 66.7
  - Male: 33.3
- **Birth Weight (grams):**
  - Median: 736
  - 75th Percentile: 773
  - 90th Percentile: 774
  - 95th Percentile: 704
  - 90th Percentile: 704
- **APGAR 1 Minute (median, 10-90%):**
  - Median: 6.58
  - 75th Percentile: 7.6
  - 90th Percentile: 7.59
  - 95th Percentile: 7.59
- **APGAR 5 Minutes (median, 10-90%):**
  - Median: 7.69
  - 75th Percentile: 7.49
  - 90th Percentile: 7.49
  - 95th Percentile: 7.49
- **Antenatal Steroids (%):**
  - Median: 100
  - 75th Percentile: 76.4
  - 90th Percentile: 84
  - 95th Percentile: 80.7
  - 90th Percentile: 80.7
  - 95th Percentile: 80.7

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**Footnotes:**
- *p < 0.05
- **p < 0.01