

# Society of NeuroInterventional Surgery: position statement on pregnancy and parental leave for physicians practicing neurointerventional surgery

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## ABSTRACT

**Background** The aim of this article is to outline a position statement on pregnancy and parental leave for physicians practicing neurointerventional surgery.

**Methods** We performed a structured literature review regarding parental leave policies in neurointerventional surgery and related fields. The recommendations resulted from discussion among the authors, and additional input from the Women in NeuroIntervention Committee, the full Society of NeuroInterventional Surgery (SNIS) Standards and Guidelines Committee, and the SNIS Board of Directors.

**Results** Some aspects of workplace safety during pregnancy are regulated by the US Nuclear Regulatory Commission. Other aspects of the workplace and reasonable job accommodations are legally governed by the Family and Medical Leave Act of 1993, the Affordable Care Act of 2010 and the Fair Labor Standards Act of 1938, Americans with Disabilities Act of 1990, Title IX of the Education Amendments of 1972, Title VII of the Civil Rights Act of 1964 as well as rights and protections put forth by the Occupational Safety and Health Administration as part of the United States Department of Labor. Family friendly policies have been associated not only with improved job satisfaction but also with improved parental and infant outcomes. Secondary effects of such accommodations are to increase the number of women within the specialty.

**Conclusions** SNIS supports a physician's ambition to have a family as well as start, develop, and maintain a career in neurointerventional surgery. Legal and regulatory mandates and family friendly workplace policies should be considered when institutions and individual practitioners approach the issue of childbearing in the context of a career in neurointerventional surgery.

The purpose of this article is to outline a clear position statement on pregnancy and parental leave for those working in the field of neurointerventional surgery. The statement was developed by the Society of NeuroInterventional Surgery's (SNIS) Women in NeuroIntervention Committee, the Standards and Guidelines Committee, and the SNIS Board of Directors. This position statement is in accordance with other interventional, surgical, and medical specialties (table 1).<sup>1–5</sup> Many current policies are geared toward trainees, but this position

statement is geared toward all practicing neurointerventionalists irrespective of experience level. It is the position of SNIS to support those who choose to become parents while pursuing a career in neurointerventional surgery.

SNIS understands and supports a physician's ambition to have a family as well as start, develop, and maintain a career in neurointerventional surgery. Those who intend pregnancy, experience pregnancy and childbirth, as the birthing or non-birthing parent, as well as those who plan to become or become parents by any method including surrogacy, adoption, etc., should not be penalized in any manner. The use of vacation time should be made flexible for those undergoing family planning methods or procedures, particularly within training programs. Fellowship training position, career promotion, and job security should be maintained during the process of starting a family.

The typical lifestyle of a neurointerventionalist may not be amenable to routine sleep, low stress levels, or other wellness initiatives by the nature and urgency of cerebrovascular disease and their indicated treatments. As such, the specialty requires emotional, physical, and mental demands on the neurointerventional surgeons as well as stroke technologists and nurses. In a recent survey published in 2019, 49.9% of respondents reported call frequency to be every day or every other day.<sup>6</sup> Although highly dependent on population density and other factors, one study estimated an average thrombectomy frequency every 4 days.<sup>7</sup> Scheduling flexibility is recommended given the numerous prenatal appointments as well as physical demands of pregnancy and childbirth in an era of increasing volume of acute ischemic stroke cases and concomitantly increasing on-call burden of professional clinical responsibilities.

While the number of women in neurointerventional surgery is increasing, barriers to the recruitment of female physicians to the field of neurointerventional surgery remain.<sup>8–11</sup> In a 2019 survey of neurointerventionalists, proposed changes to reduce such barriers included factors such as supporting family life as well as addressing concerns regarding radiation exposure.<sup>12</sup>

## RADIATION EXPOSURE

In accordance with the US Nuclear Regulatory Commission (NRC), a pregnancy declaration is made at the discretion of the pregnant individual

**Table 1** Precedence for parental leave policies in US medical specialties and training programs

| Governing body                                      | Length of parental leave   | Year | Reference   |
|---|--|------|---|
| Society of Interventional Radiology                 | 6 weeks  | 2017 | <a href="https://www.sirweb.org/globalassets/aasociety-of-interventional-radiology-home-page/practice-resources/standards_pdfs/sir_position_statement_parental_leave_final.pdf">https://www.sirweb.org/globalassets/aasociety-of-interventional-radiology-home-page/practice-resources/standards_pdfs/sir_position_statement_parental_leave_final.pdf</a> |
| American Board of Neurological Surgery              | Residency: 84 months of training with 54 months of core training, 30 months of elective time<br>Post-residency: 125 consecutive cases within 18 months | 2022 | <a href="https://abns.org/family-and-medical-leave/">https://abns.org/family-and-medical-leave/</a>   |
| American Board of Psychiatry and Neurology          | 6 weeks  | 2015 | <a href="https://www.abpn.com/faq/may-vacation-or-leave-time-be-used-to-complete-training-earlier/">https://www.abpn.com/faq/may-vacation-or-leave-time-be-used-to-complete-training-earlier/</a>   |
| American Board of Surgery                           | Residency: 16 weeks within the first 3 years, 12 weeks over the last 2 years. Option for 6 year residency  | 2021 | <a href="https://www.absurgery.org/default.jsp?policygslave">https://www.absurgery.org/default.jsp?policygslave</a>   |
| American Board of Medical Specialties               | 6 weeks  | 2021 | <a href="https://www.abms.org/policies/parental-leave/">https://www.abms.org/policies/parental-leave/</a>   |
| American Medical Association                        | 6 weeks  | 2022 | <a href="https://policysearch.ama-assn.org/policyfinder/detail/family-leave?uri=%2FAMADoc%2FHOD.xml-0-3580.xml">https://policysearch.ama-assn.org/policyfinder/detail/family-leave?uri=%2FAMADoc%2FHOD.xml-0-3580.xml</a>   |
| American College of Obstetricians and Gynecologists | 6 weeks  | 2020 | <a href="https://www.acog.org/clinical-information/policy-and-position-statements/statements-of-policy/2020/paid-parental-leave">https://www.acog.org/clinical-information/policy-and-position-statements/statements-of-policy/2020/paid-parental-leave</a>   |
| American Board of Plastic Surgery                   | 12 weeks   | 2021 | <a href="https://www.abplasticsurgery.org/media/19183/Personal-Leave-Policy-Approved-5-2021.pdf">https://www.abplasticsurgery.org/media/19183/Personal-Leave-Policy-Approved-5-2021.pdf</a>   |
| American Academy of Pediatrics                      | 12 weeks   | 2020 | <a href="https://publications.aap.org/pediatrics/article/149/3/e2021055988/184884/Parental-Leave-for-Residents-and-Pediatric?autologin-check=redirected">https://publications.aap.org/pediatrics/article/149/3/e2021055988/184884/Parental-Leave-for-Residents-and-Pediatric?autologin-check=redirected</a>   |
| American Academy of Family Physicians               | 12 weeks   | 2022 | <a href="https://www.aafp.org/about/policies/all-parental-leave.html">https://www.aafp.org/about/policies/all-parental-leave.html</a>   |

in order to appropriately monitor the radiation dose of the fetus and remain below the allowable dose in pregnancy (0.05 mSv/month or 5 mSv total in pregnancy).<sup>13</sup> Once a pregnancy declaration is made, the pregnant individual is entitled to privacy protection as well as professional respect given the medical and other sensitivities that can accompany pregnancy. During this process, specific instruction from the hospital and/or institution's radiation safety officer may be helpful for further information regarding fetal radiation dose and protective measures. An appropriate radiation safety team is essential for institutions of any size.

It is the responsibility of the employer to provide adequate protective measures against radiation for the expectant parent as per regulations by the NRC and/or its agreement states.<sup>14</sup> In keeping with the "As Low As Reasonably Achievable" principle of ionizing radiation reduction, appropriate intra-procedural safety measures during pregnancy are recommended, including but not limited to:

- ▶ Ancillary shielding
- ▶ Personal shielding using additional lead
- ▶ Radiation dosimeters worn outside the lead at the level of the collar as well as inside the lead at the level of the waist, and
- ▶ Minimization of hand injections of contrast or other long, high-dose angiographic procedures that expose the operator to high levels of x-rays<sup>10 15–17</sup>

Studies of radiation exposure to neurointerventionalists are limited. Given these limitations, the experience of a single neurointerventional fellow recorded negligible to very low

dose measurements over a 6 month period within her pregnancy by following these radiation safety precautions.<sup>18</sup> Due to the association of heavy workload in surgical specialties and pregnancy complications,<sup>19</sup> the allowance for a female neurointerventionalist to maintain a healthy pregnancy and have the schedule flexibility to attend prenatal and/or medical appointments without penalty should be made.

## SUPPORTING FAMILY LIFE

SNIS supports parental leave for both the birthing and non-birthing parent. Congress enacted the Family and Medical Leave Act (FMLA) in 1993 to support an absence of up to 12 weeks for eligible employees for family-related health or medical issues.<sup>20</sup> States can also mandate leaves in excess of federal FMLA standards. In 2010, the Affordable Care Act added an amendment to the Fair Labor Standards Act (FLSA) of 1938 requiring employers to provide time and a place, other than a bathroom, for employees to express milk for up to 1 year following childbirth in addition to breastfeeding laws which vary by state.<sup>21</sup> Physicians cite the lack of breastfeeding facilities as the most difficult aspect of returning to work.<sup>22</sup> As such, a private room with chair and electrical outlet should be provided to a breastfeeding mother on return to work, as well as adequate break time in order to pump breast milk for up to 1 year following childbirth, as supported by SNIS.

Further, the American College of Radiology (ACR) passed a resolution recommending 12 weeks of paid parental or medical leave in a 12 month period.<sup>23</sup> The birthing parent is encouraged to take a minimum of 6 weeks of parental leave for vaginal birth and 8 weeks of parental leave for caesarean section, although this may vary based on state disability insurance reimbursement. The non-birthing parent is also encouraged to use a minimum of 6 weeks of parental leave. New parents should not be required to use sick and/or vacation time towards parental leave.<sup>3</sup> Trainees in a 2 year or longer training program should not be required to extend their training, which should be paid for ACGME (Accreditation Council for Graduate Medical Education) trainees in a training program of any length.<sup>3 24</sup> Scheduling flexibility is imperative such that equitable or near-equitable clinical responsibilities may be maintained. However, in the event of prolonged illness or complications, making up missed call shifts may not be mandated. Conversely, a pregnant or postpartum female should not be removed from work duties at the discretion of the department, but rather, only by the recommendation of the healthcare professionals directly caring for the individual. This is upheld by Title IX,<sup>25</sup> Title VII of the Civil Rights Act of 1964,<sup>26</sup> and the Americans with Disabilities Act of 1990.<sup>27</sup> The use of parental leave should not be penalized, nor does it reflect a lack of commitment to the profession as this mentality may have damaging effects to the practice or institution.<sup>28</sup> Parental leave has been associated with improved parental and infant outcomes<sup>29</sup> as well as a reduction in post-neonatal mortality.<sup>30</sup>

## CONCLUSION

Legal and regulatory mandates and family friendly workplace policies should be considered when institutions and individual practitioners approach the issue of childbearing and child rearing in the context of a career in neurointerventional surgery. Although the exact recommendations for pregnancy and parental leave may differ from state to state, general recommendations are suggested by SNIS in keeping

with other medical, interventional, and surgical specialties and federal standards.

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In the interest of transparency, we ask you to disclose all relationships/activities/interests listed below that are related to the content of your manuscript. "Related" means any relation with for-profit or not-for-profit third parties whose interests may be affected by the content of the manuscript. Disclosure represents a commitment to transparency and does not necessarily indicate a bias. If you are in doubt about whether to list a relationship/activity/interest, it is preferable that you do so.

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| <b>Time frame: Since the initial planning of the work</b> |  |   |   |  |  |  |  |  |   |
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| <b>Time frame: past 36 months</b>                         |  |   |   |  |  |  |  |  |   |
| <b>2</b>  | Grants or contracts from any entity (if not indicated in item #1 above).   | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%;"></td></tr> </table> |   |  |  |  |  |  |   |
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| <b>3</b>  | Royalties or licenses  | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%;"></td></tr> <tr><td style="width: 50%; height: 20px;"></td><td style="width: 50%;"></td></tr> </table> |   |  |  |  |  |  |   |
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| 4  | Consulting fees  | <input checked="" type="checkbox"/> None   |   |
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| 7  | Support for attending meetings and/or travel   | <input checked="" type="checkbox"/> None   |   |
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| 8  | Patents planned, issued or pending   | <input checked="" type="checkbox"/> None   |   |
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| 9  | Participation on a Data Safety Monitoring Board or Advisory Board  | <input checked="" type="checkbox"/> None   |   |
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| 10 | Leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid            | <input checked="" type="checkbox"/> None   |   |
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| <b>11</b>   | Stock or stock options   | <input checked="" type="checkbox"/> <b>None</b>  |   |
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| <b>12</b>   | Receipt of equipment, materials, drugs, medical writing, gifts or other services | <input checked="" type="checkbox"/> <b>None</b>  |   |
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| <b>13</b>   | Other financial or non-financial interests                                       | <input checked="" type="checkbox"/> <b>None</b>  |   |
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| <p><b>Please place an "X" next to the following statement to indicate your agreement:</b></p> <p><input checked="" type="checkbox"/> I certify that I have answered every question and have not altered the wording of any of the questions on this form.</p> |  |  |   |

### ICMJE DISCLOSURE FORM

**Date:** 10/15/2022

**Your Name:** Amanda Baker

**Manuscript Title:** Society of Neurointerventional Surgery: Position Statement on Pregnancy and Parental Leave For Physicians Practicing Neurointerventional Surgery

**Manuscript Number (if known):** jnis-2022-019613

In the interest of transparency, we ask you to disclose all relationships/activities/interests listed below that are related to the content of your manuscript. "Related" means any relation with for-profit or not-for-profit third parties whose interests may be affected by the content of the manuscript. Disclosure represents a commitment to transparency and does not necessarily indicate a bias. If you are in doubt about whether to list a relationship/activity/interest, it is preferable that you do so.

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| <b>13</b>   | Other financial or non-financial interests                                       | <input checked="" type="checkbox"/> <b>None</b>  |   |
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| <p><b>Please place an "X" next to the following statement to indicate your agreement:</b></p> <p><input checked="" type="checkbox"/> I certify that I have answered every question and have not altered the wording of any of the questions on this form.</p> |  |  |   |

## ICMJE DISCLOSURE FORM

**Date:** 10/20/2022

**Your Name:** Neil Haranhalli

**Manuscript Title:** Society of Neurointerventional Surgery: Position Statement on Pregnancy and Parental Leave For Physicians Practicing Neurointerventional Surgery

**Manuscript Number (if known):** Jnis-2022-019613.R1

In the interest of transparency, we ask you to disclose all relationships/activities/interests listed below that are related to the content of your manuscript. "Related" means any relation with for-profit or not-for-profit third parties whose interests may be affected by the content of the manuscript. Disclosure represents a commitment to transparency and does not necessarily indicate a bias. If you are in doubt about whether to list a relationship/activity/interest, it is preferable that you do so.

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## ICMJE DISCLOSURE FORM

**Date:** 10/15/2022

**Your Name:** Stavropoula Tjoumakaris

**Manuscript Title:** "Society of Neurointerventional Surgery: Position Statement on Pregnancy and Parental Leave For Physicians Practicing Neurointerventional Surgery"

**Manuscript Number (if known):** jnis-2022-019613.R1

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|   |  | Name all entities with whom you have this relationship or indicate none (add rows as needed) | Specifications/Comments (e.g., if payments were made to you or to your institution) |
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| <b>11</b>   | Stock or stock options   | <input checked="" type="checkbox"/> <b>None</b>  |   |
|   |  |  |   |
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| <b>12</b>   | Receipt of equipment, materials, drugs, medical writing, gifts or other services | <input checked="" type="checkbox"/> <b>None</b>  |   |
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| <b>13</b>   | Other financial or non-financial interests                                       | <input checked="" type="checkbox"/> <b>None</b>  |   |
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| <p><b>Please place an "X" next to the following statement to indicate your agreement:</b></p> <p><input checked="" type="checkbox"/> I certify that I have answered every question and have not altered the wording of any of the questions on this form.</p> |  |  |   |

## ICMJE DISCLOSURE FORM

**Date:** 10/20/2022

**Your Name:** Jenny P. Tsai

**Manuscript Title:** Society of Neurointerventional Surgery: Position Statement on Pregnancy and Parental Leave For Physicians Practicing Neurointerventional Surgery

**Manuscript Number (if known):** jnis-2022-019613.R1

In the interest of transparency, we ask you to disclose all relationships/activities/interests listed below that are related to the content of your manuscript. "Related" means any relation with for-profit or not-for-profit third parties whose interests may be affected by the content of the manuscript. Disclosure represents a commitment to transparency and does not necessarily indicate a bias. If you are in doubt about whether to list a relationship/activity/interest, it is preferable that you do so.

The author's relationships/activities/interests should be defined broadly. For example, if your manuscript pertains to the epidemiology of hypertension, you should declare all relationships with manufacturers of antihypertensive medication, even if that medication is not mentioned in the manuscript.

In item #1 below, report all support for the work reported in this manuscript without time limit. For all other items, the time frame for disclosure is the past 36 months.

|  | Name all entities with whom you have this relationship or indicate none (add rows as needed)   | Specifications/Comments (e.g., if payments were made to you or to your institution)   |  |  |  |  |  |   |
|--|--|---|--|--|--|--|--|---|
| Time frame: Since the initial planning of the work |  |   |  |  |  |  |  |   |
| <b>1</b>   | All support for the present manuscript (e.g., funding, provision of study materials, medical writing, article processing charges, etc.)<br><b>No time limit for this item.</b> | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr><td style="width: 60%; height: 15px;"></td><td style="width: 40%;"></td></tr> <tr><td style="height: 15px;"></td><td></td></tr> <tr><td style="height: 15px;"></td><td style="text-align: right; font-size: small;">Click the tab key to add additional rows.</td></tr> </table> |  |  |  |  |  | Click the tab key to add additional rows. |
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| Time frame: past 36 months                         |  |   |  |  |  |  |  |   |
| <b>2</b>   | Grants or contracts from any entity (if not indicated in item #1 above).   | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr><td style="width: 60%; height: 15px;"></td><td style="width: 40%;"></td></tr> <tr><td style="height: 15px;"></td><td></td></tr> <tr><td style="height: 15px;"></td><td></td></tr> </table>   |  |  |  |  |  |   |
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| <b>3</b>   | Royalties or licenses  | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr><td style="width: 60%; height: 15px;"></td><td style="width: 40%;"></td></tr> <tr><td style="height: 15px;"></td><td></td></tr> <tr><td style="height: 15px;"></td><td></td></tr> </table>   |  |  |  |  |  |   |
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| 4   | Consulting fees  | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width:100%; height: 40px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>  |   |        |  |  |  |  |  |
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| 5   | Payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width:100%; height: 40px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>  |   |        |  |  |  |  |  |
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| 6   | Payment for expert testimony   | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width:100%; height: 40px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>  |   |        |  |  |  |  |  |
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| 7   | Support for attending meetings and/or travel   | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width:100%; height: 40px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>  |   |        |  |  |  |  |  |
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| 8   | Patents planned, issued or pending   | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width:100%; height: 40px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>  |   |        |  |  |  |  |  |
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| 9   | Participation on a Data Safety Monitoring Board or Advisory Board  | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width:100%; height: 40px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>  |   |        |  |  |  |  |  |
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| 10  | Leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid            | <input type="checkbox"/> <b>None</b><br><table border="1" style="width:100%; height: 40px;"> <tr> <td>Chair of Diversity, Equity, Inclusion Committee of the Society of Neurointerventional Surgery; SNIS Board of Directors member</td> <td>Unpaid</td> </tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table> | Chair of Diversity, Equity, Inclusion Committee of the Society of Neurointerventional Surgery; SNIS Board of Directors member | Unpaid |  |  |  |  |  |
| Chair of Diversity, Equity, Inclusion Committee of the Society of Neurointerventional Surgery; SNIS Board of Directors member | Unpaid   |   |   |        |  |  |  |  |  |
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| <b>11</b>   | Stock or stock options   | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="height: 20px;"></td><td style="width: 50%;"></td></tr> <tr><td style="height: 20px;"></td><td></td></tr> <tr><td style="height: 20px;"></td><td></td></tr> </table> |   |  |  |  |  |  |  |
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| <b>12</b>   | Receipt of equipment, materials, drugs, medical writing, gifts or other services | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="height: 20px;"></td><td style="width: 50%;"></td></tr> <tr><td style="height: 20px;"></td><td></td></tr> <tr><td style="height: 20px;"></td><td></td></tr> </table> |   |  |  |  |  |  |  |
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| <b>13</b>   | Other financial or non-financial interests                                       | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="height: 20px;"></td><td style="width: 50%;"></td></tr> <tr><td style="height: 20px;"></td><td></td></tr> <tr><td style="height: 20px;"></td><td></td></tr> </table> |   |  |  |  |  |  |  |
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| <p><b>Please place an "X" next to the following statement to indicate your agreement:</b></p> <p><input checked="" type="checkbox"/> I certify that I have answered every question and have not altered the wording of any of the questions on this form.</p> |  |  |   |  |  |  |  |  |  |

## ICMJE DISCLOSURE FORM

**Date:** 10/15/2022

**Your Name:** Steven Hetts, MD

**Manuscript Title:** Parental Leave Statement

**Manuscript Number (if known):** Click or tap here to enter text.

In the interest of transparency, we ask you to disclose all relationships/activities/interests listed below that are related to the content of your manuscript. "Related" means any relation with for-profit or not-for-profit third parties whose interests may be affected by the content of the manuscript. Disclosure represents a commitment to transparency and does not necessarily indicate a bias. If you are in doubt about whether to list a relationship/activity/interest, it is preferable that you do so.

The author's relationships/activities/interests should be defined broadly. For example, if your manuscript pertains to the epidemiology of hypertension, you should declare all relationships with manufacturers of antihypertensive medication, even if that medication is not mentioned in the manuscript.

In item #1 below, report all support for the work reported in this manuscript without time limit. For all other items, the time frame for disclosure is the past 36 months.

|   |  | Name all entities with whom you have this relationship or indicate none (add rows as needed)   | Specifications/Comments (e.g., if payments were made to you or to your institution) |         |         |         |          |         |   |
|---|--|--|---|---------|---------|---------|----------|---------|---|
| <b>Time frame: Since the initial planning of the work</b> |  |  |   |         |         |         |          |         |   |
| <b>1</b>  | All support for the present manuscript (e.g., funding, provision of study materials, medical writing, article processing charges, etc.)<br><b>No time limit for this item.</b> | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; margin-top: 5px;"> <tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%;"></td></tr> <tr><td style="height: 15px;"></td><td></td></tr> <tr><td style="height: 15px;"></td><td></td></tr> </table>                                 |   |         |         |         |          |         | Click the tab key to add additional rows. |
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|   |  |  |   |         |         |         |          |         |   |
| <b>Time frame: past 36 months</b>                         |  |  |   |         |         |         |          |         |   |
| <b>2</b>  | Grants or contracts from any entity (if not indicated in item #1 above).   | <input type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; margin-top: 5px;"> <tr><td style="width: 50%; height: 15px;">Siemens</td><td style="width: 50%;">To UCSF</td></tr> <tr><td style="height: 15px;">Stryker</td><td>To UCSF</td></tr> <tr><td style="height: 15px;">Route 92</td><td>To UCSF</td></tr> </table> | Siemens   | To UCSF | Stryker | To UCSF | Route 92 | To UCSF |   |
| Siemens   | To UCSF  |  |   |         |         |         |          |         |   |
| Stryker   | To UCSF  |  |   |         |         |         |          |         |   |
| Route 92  | To UCSF  |  |   |         |         |         |          |         |   |
| <b>3</b>  | Royalties or licenses  | <input checked="" type="checkbox"/> <b>None</b><br><table border="1" style="width: 100%; margin-top: 5px;"> <tr><td style="width: 50%; height: 15px;"></td><td style="width: 50%;"></td></tr> <tr><td style="height: 15px;"></td><td></td></tr> <tr><td style="height: 15px;"></td><td></td></tr> </table>                                 |   |         |         |         |          |         |   |
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|    |  | Name all entities with whom you have this relationship or indicate none (add rows as needed) | Specifications/Comments (e.g., if payments were made to you or to your institution) |
|----|--|--|---|
| 4  | Consulting fees  | <input checked="" type="checkbox"/> None   |   |
|    |  |  |   |
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| 5  | Payment or honoraria for lectures, presentations, speakers bureaus, manuscript writing or educational events | <input checked="" type="checkbox"/> None   |   |
|    |  |  |   |
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| 6  | Payment for expert testimony   | <input checked="" type="checkbox"/> None   |   |
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| 7  | Support for attending meetings and/or travel   | <input checked="" type="checkbox"/> None   |   |
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|    |  |  |   |
| 8  | Patents planned, issued or pending   | <input type="checkbox"/> None  |   |
|    |  | ChemoFilter  | Assigned to UCSF  |
|    |  |  |   |
|    |  |  |   |
| 9  | Participation on a Data Safety Monitoring Board or Advisory Board  | <input type="checkbox"/> None  |   |
|    |  | Cerenovus  | To me   |
|    |  | Medtronic  | To me   |
|    |  | Imperative   | To me   |
|    |  |  |   |
| 10 | Leadership or fiduciary role in other board, society, committee or advocacy group, paid or unpaid            | <input checked="" type="checkbox"/> None   |   |
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|   |  | Name all entities with whom you have this relationship or indicate none (add rows as needed) | Specifications/Comments (e.g., if payments were made to you or to your institution) |
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| <b>11</b>   | Stock or stock options   | <input type="checkbox"/> None  |   |
|   |  | ThrombX  | Equity  |
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| <b>12</b>   | Receipt of equipment, materials, drugs, medical writing, gifts or other services | <input checked="" type="checkbox"/> None   |   |
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|   |  |  |   |
| <b>13</b>   | Other financial or non-financial interests                                       | <input checked="" type="checkbox"/> None   |   |
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| <p><b>Please place an "X" next to the following statement to indicate your agreement:</b></p> <p><input checked="" type="checkbox"/> I certify that I have answered every question and have not altered the wording of any of the questions on this form.</p> |  |  |   |