

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

Amanda Baker <sup>1</sup>, Sandra Narayanan,<sup>2</sup> Jenny P Tsai,<sup>3</sup> Stavropoula I Tjoumakaris <sup>4</sup>, Neil Haranhalli,<sup>5</sup> Justin F Fraser,<sup>6</sup> Steven W Hetts <sup>7</sup>, SNIS Standards and Guidelines Committee, SNIS Board of Directors

<sup>1</sup>Radiology and Biomedical Imaging, UCSF, San Francisco, California, USA

<sup>2</sup>Neurointerventional Program and Comprehensive Stroke Program, Pacific Neuroscience Institute, Santa Monica, California, USA

<sup>3</sup>Neurology, Spectrum Health, Grand Rapids, Michigan, USA

<sup>4</sup>Neurological Surgery, Thomas Jefferson University Hospital, Philadelphia, Pennsylvania, USA

<sup>5</sup>Neurosurgery, Montefiore Hospital and Medical Center, Bronx, New York, USA

<sup>6</sup>Neurological Surgery, University of Kentucky, Lexington, Kentucky, USA

<sup>7</sup>Radiology and Biomedical Imaging and Neurological Surgery, UCSF, San Francisco, California, USA

## Correspondence to

Dr Steven W Hetts, Radiology, UCSF, San Francisco, California 94143, USA; [steven.hetts@ucsf.edu](mailto:steven.hetts@ucsf.edu)

Received 5 September 2022

Accepted 25 October 2022

Published Online First

17 November 2022



Check for updates

© Author(s) (or their employer(s)) 2023. No commercial re-use. See rights and permissions. Published by BMJ.

**To cite:** Baker A, Narayanan S, Tsai JP, et al. *J NeuroInterv Surg* 2023;**15**:5–7.

## 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 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?policygleave">https://www.absurgery.org/default.jsp?policygleave</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?url=%2FAMADoc%2FHOD.xml-0-3580.xml">https://policysearch.ama-assn.org/policyfinder/detail/family-leave?url=%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.

**Twitter** Amanda Baker @amandaebaker and Sandra Narayanan @SandraNarayanan

**Acknowledgements** The authors acknowledge the critical reading and suggestions of Megan La Suer, JD, and Rob Portman, JD, in improving this document and Teri Moore and Eddie Woods for logistical support.

**Collaborators** SNIS Standards and Guidelines Committee: Steven W. Hetts, Charles Prestigiacomo, Clemens Schirmer, Neil Haranhalli, Ketan Bulsara, Stavropoula Tjoumakaris, Fawaz Al-Mufti, Shivani Pahwa, Kazim Narsinh, Neeraj Chaudhary, Jan-Karl Burkhardt, Franklin Marden. SNIS Board of Directors: J Mocco, Mahesh Jayaraman, Johanna Fifi, Guilherme Dabus, Reade DeLeacy, Peter Kan, Jeremy Heit, Justin Mascitelli, Sunil Sheth, Michael Chen, William Mack, Justin Fraser, Jenny Tsai, Michael Froehler, Felipe Albuquerque, Blaise Baxter, Sameer Ansari, Steven Hetts.

**Contributors** All authors contributed to this document.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Disclaimer** This position statement is provided for informational and educational purposes only. Adherence to any recommendations included in this statement will not ensure successful treatment in every situation. Furthermore, the recommendations contained in this document should not be interpreted as setting a standard of care, or be deemed inclusive of all proper methods of care nor exclusive of other methods of care reasonably directed to obtaining the same results. The ultimate judgment regarding the propriety of any specific therapy must be made by the physician and the patient in light of all the circumstances presented by the individual patient, and the known variability and biological behavior of the medical condition. This document and its conclusions and recommendations reflect the best available information at the time the position statement was prepared. The results of future studies may require revisions to the recommendations in this review to reflect new data. The Society of Neurointerventional Surgery (SNIS) does not warrant the accuracy or completeness of the position statement and assumes no responsibility for any injury or damage to persons or property arising out of or related to any use of this document or for any errors or omissions.

**Competing interests** The contents of this manuscript are solely the responsibility of the authors and do not necessarily represent the official views of the National Institutes of Health ("NIH"). SWH research is supported by NIH (R01CA194533, R42CA265316, R01EB012031). SWH has consulting agreements with Medtronic, Kaneka, Imperative, and Cerenovus. SWH's institution has contract and grant support from Siemens, Stryker Neurovascular, and Route 92. None of the other authors have relevant disclosures. JFF and SIT serve on the Editorial Board of the Journal of Neurointerventional Surgery.

**Patient consent for publication** Not applicable.

**Ethics approval** Not applicable.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Supplemental material** This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

#### ORCID iDs

Amanda Baker <http://orcid.org/0000-0001-9973-5792>

Stavropoula I Tjoumakaris <http://orcid.org/0000-0002-1054-9414>

Steven W Hetts <http://orcid.org/0000-0001-5885-7259>

#### REFERENCES

- Englander MJ, Ghatan CE, Hamilton BN, *et al*. Society of interventional radiology position statement on parental leave. *J Vasc Interv Radiol* 2017;28:993–4.
- Association AM. Ama statement on family and medical leave H-420.979, 2016. Available: [https://policysearch.ama-assn.org/policyfinder/detail/\\*?uri=%2FAMADoc%2FHOD.xml-0-3722.xml](https://policysearch.ama-assn.org/policyfinder/detail/*?uri=%2FAMADoc%2FHOD.xml-0-3722.xml)
- Specialties ABoM. American Board of medical specialties policy on parental, caregiver and medical leave during training, 2021. Available: <https://www.abms.org/policies/parental-leave/>
- Gynecologists TACoOa. Parental leave Statemnet of policy, 2016
- Surgeons ACo. Statement on the importance of pregnancy, parental leave, and workplace Accommodations for surgical residents and fellows. Available: <https://www.facs.org/about-acsc/statements/121-parental-leave>
- Fargen KM, Arthur AS, Leslie-Mazwi T, *et al*. A survey of burnout and professional satisfaction among United States neurointerventionalists. *J Neurointerv Surg* 2019;11:1100–4.
- Bulwa Z, Chen M, Designations SC. Stroke center designations, Neurointerventionalist demand, and the finances of stroke thrombectomy in the United States. *Neurology* 2021;97:S17–24.
- Schizas D, Papapanou M, Routsis E, *et al*. Career barriers for women in surgery. *Surgeon* 2022;20:275–83.
- Plonsker JH, Benzil D, Air EL, *et al*. Gender equality in neurosurgery and strategic goals toward a more balanced workforce. *Neurosurgery* 2022;90:642–7.
- Marx MV. Baby on board: managing occupational radiation exposure during pregnancy. *Tech Vasc Interv Radiol* 2018;21:32–6.
- Englander MJ, Ghatan C. Radiation and the pregnant IR: myth versus fact. *Cardiovasc Intervent Radiol* 2021;44:877–82.
- Power S, Biondi A, Saatci I, *et al*. Women in neurointervention, a gender gap? results of a prospective online survey. *Interv Neuroradiol* 2022;28:311–22.
- Commission USNR. *Instruction concerning prenatal radiation exposure*. Research OoNR, 1999.
- The atomic energy act of 1954, 1954
- Stahl CM, Meisinger QC, Andre MP, *et al*. Radiation risk to the fluoroscopy operator and staff. *AJR Am J Roentgenol* 2016;207:737–44.
- Biso SMR, Vidovich MI. Radiation protection in the cardiac catheterization laboratory. *J Thorac Dis* 2020;12:1648–55.
- Prasad KN, Cole WC, Haase GM. Radiation protection in humans: extending the concept of as low as reasonably achievable (ALARA) from dose to biological damage. *Br J Radiol* 2004;77:97–9.
- Chen SH, Brunet M-C. Fetal radiation exposure risk in the pregnant neurointerventionalist. *J Neurointerv Surg* 2020;12:1014–7.
- Behbehani S, Tulandi T. Obstetrical complications in pregnant medical and surgical residents. *J Obstet Gynaecol Can* 2015;37:25–31.
- Labor USDo. Family and medical leave act; 1993.
- Legislatures NCoS
- Juengst SB, Royston A, Huang I, *et al*. Family leave and return-to-work experiences of physician mothers. *JAMA Netw Open* 2019;2:e1913054.
- American College of Radiology Digest of Council Actions [press release]. 2021-2022
- Education ACfGM. Acgme institutional requirements; 2022.
- Justice USDo. Title IX; 1974.
- Commission USEEO. Title VII of the civil rights act; 1964.
- Labor USDo. Americans with disabilities act; 1990.
- Petts RJ, Mize TD, Kaufman G. Organizational policies, workplace culture, and perceived job commitment of mothers and fathers who take parental leave. *Soc Sci Res* 2022;103:102651.
- Bullinger LR. The effect of paid family leave on infant and parental health in the United States. *J Health Econ* 2019;66:101–16.
- Montoya-Williams D, Passarella M, Lorch SA. The impact of paid family leave in the United States on birth outcomes and mortality in the first year of life. *Health Serv Res* 2020;55 Suppl 2:807–14.