

The Global Alliance for Prevention of Spina Bifida (GAPSBiF) – From World Health Assembly Resolution to Implementation

S. Hassan A. Akbari, Anastasia Arynchyna-Smith, Gail Rosseau, Jeffrey P. Blount

Since 1991, we have known that folic acid deficiency contributes to the vast majority of neural tube defects (NTDs)¹. Soon thereafter, it became clear that food fortification with folic acid was the most effective and safe method in reducing the rate of NTDs, leading to over 60 countries mandating folic acid fortification of staple foods. While fortifying countries have seen reductions in spina bifida rates and a cost-benefit ratio of as high as 1:150, the vast majority of countries across the globe do not fortify foods with folic acid, resulting in over 300,000 pregnancies affected by neural tube defects. Some of the barriers to folic acid fortification efforts have been a lack of political will and social awareness regarding the burden of NTDs on the child, family, community, and overall medical system. Another barrier is the need for an appropriate food vehicle that matches the cultural food preferences of the region. There was also a need for a strong stand-alone recommendation from the World Health Organization on the urgent need to fortify foods with micronutrients to prevent deficiencies and fight hidden hunger.

This is where organized neurosurgery comes into play. Neurosurgeons, due to our intimate knowledge of spina bifida and anencephaly, have a unique role to play not only as treating physicians but also as advocates for children with NTDs and the prevention of NTDs³. To help champion this cause, the Global Alliance for Prevention of Spina Bifida (GAPSBiF) was co-founded in 2019 by neurosurgeons Dr. Jeffrey Blount (University of Alabama at Birmingham) and Dr. Gail Rosseau (George Washington University). This organization includes neurosurgeons, other specialty physicians, public health experts, patient advocacy groups, Rotary members, nutrition experts, advocacy groups, and students who all collectively champion the prevention of NTDs through the use of science-based advocacy and policy change.

Citing decades of evidence regarding the safety and cost-effectiveness of folic acid fortification in reducing neural tube defects, members of GAPSBiF participated in both the 75th (2022) and 76th (2023) World Health Assemblies in Geneva, Switzerland (Figure 1). Through efforts from members of GAPSBiF, the Ministry of Health of Colombia, and civil society partners, the 76th World Health Assembly in May 2023 adopted resolution *WHA76.19: Accelerating efforts for preventing micronutrient deficiencies and their consequences, including spina bifida and other neural tube defects, through safe and effective food fortification*. This resolution urges Member States to implement food fortification with folic acid to prevent birth defects, along with promoting healthy diets, working with government and health professions on surveillance to monitor progress being made, and collaborating on fortification efforts in multisectoral arenas. Furthermore, the resolution requests the Director-General of the World Health Organization to provide evidence-based guidance, monitoring, evaluation, and quality assurance for fortification. GAPSBiF played an important role in ensuring that this resolution not only covers folic acid fortification, but micronutrient fortification as a whole, including Vitamin A, zinc, and iodine.

WHA76.19 was a tremendous win for mothers, babies, health administrators, and governments across the globe. Now a year into adoption, the focus shifts to the implementation of large-scale food fortification. GAPSBiF, along with organizations such as Rotary International, ReachAnother, Food Fortification Initiative, Nutrition International, and the Global Alliance for Improved Nutrition, is leading the way in these efforts globally by calling for the immediate reduction of preventable spina bifida via the fortification of food sources with folic acid. GAPSBiF accomplishes this mission by supporting colleagues in non-fortifying countries, providing practical, comprehensive, and thorough data on the need for and implementation of fortification, drafting manuscripts, supporting prevention and after-care programs, and working with governments, health ministries, and policymakers to implement fortification. GAPSBiF members are also at the forefront of research investigating salt as a universal vehicle for food fortification in India, Zambia, Ethiopia, and the U.S.⁴ Further efforts from the organization include webinars, country-specific planning and administration, manuscripts, and continued participation in the World Health Assembly.

Folic acid fortification for the prevention of neural tube defects represents a global healthcare disparity: low- and middle-income countries are disproportionately less likely to fortify food grains with folic acid. Importantly, the cost-effectiveness of folic acid fortification must be highlighted. Folic acid fortification can significantly reduce the financial burden of healthcare beyond the cost of fortification due to a reduction in healthcare demands for patients with NTDs. Folic acid fortification can occur cheaply through multiple food staple vehicles, including wheat flour, salt, edible oil, and rice. Especially in low- or middle-income countries, populations rely on these easily fortified staples for sustenance, making them prime targets for fortification. Many countries are already fortifying portions of their grains or are fortifying with only one or a few micronutrients. As a result, the infrastructure often exists for large-scale food fortification. Public and government-level awareness is often needed to push the needle forward for more encompassing fortification efforts. The key is to level the market by passing mandates to fortify staple foods. This encourages all producers, rather than the conscious few, to fortify their products. The cost of fortification is minimal but the profit margin is small as well, so normalizing expectations across all producers helps maintain profits.

Efforts by GAPSBiF members are actively spreading globally. Initiatives in Colombia, Sierra Leone, Pakistan, Nigeria, India, Turkey, Zambia and other nations have taken off through grass-roots efforts by members. GAPSBiF welcomes all with a passion for folic acid fortification, from senior neurosurgery faculty to residents, from PhD epidemiologists and Masters level advocates to undergraduate students, from non-governmental organizations to the concerned public. Any individual with a passion for children, mothers, public health, fortification, policy, and industry can speak up and get involved during every-other-week virtual meetings of the organization. Each meeting covers a variety of topics from nation-specific initiatives, widespread global efforts, grass-roots advocacy, and general information on fortification. A GAPSBiF annual conference is also currently being developed. GAPSBiF invites all physicians, patients, and advocates to champion sustainable folic acid fortification programs to their World Health

Assembly delegations. Coordinated advocacy efforts between GAPSBiF, other organizations, and the general public have resulted in folic acid fortification implementation in select countries such as Ethiopia (Figure 2). Continued advocacy efforts can help ensure folic acid fortification occurs worldwide.

The Global Alliance for Prevention of Spina Bifida not only calls for global folic acid fortification; it leads the effort.

For more information or to get involved in GAPSBiF, please sign up for the Spina Bifida Presentation Forum at <https://sbf-forum.org/index.php>. For questions, please contact Jeffrey Blount at Jeffrey.blount@childrensal.org or Anastasia Arynchyna-Smith at: arynch@uab.edu.



*Figure 1. World Health Assembly 2023 Side event:
Fortify the Future: A WHA side event supporting the proposed resolution*



Figure 2. GAPSBiF meeting with the Ethiopian Ministry of Health delegation regarding folic acid fortification at WHA75 (2022).

References

1. Prevention of neural tube defects: Results of the Medical Research Council Vitamin Study. *The Lancet*. 1991;338(8760):131-137. doi:10.1016/0140-6736(91)90133-A
2. Wald NJ, Morris JK, Blakemore C. Public health failure in the prevention of neural tube defects: time to abandon the tolerable upper intake level of folate. *Public Health Rev*. 2018;39(1):2. doi:10.1186/s40985-018-0079-6
3. Shlobin NA, Roach JT, Kancherla V, et al. The role of neurosurgeons in global public health: the case of folic acid fortification of staple foods to prevent spina bifida. *J Neurosurg Pediatr*. 2023;31(1):8-15. doi:10.3171/2022.9.PEDS22188
4. Pattisapu JV, Manda VV, Kottakki MNR, et al. Folic Acid–Fortified Iodized Salt and Serum Folate Levels in Reproductive-Aged Women of Rural India: A Nonrandomized Controlled Trial. *JAMA Netw Open*. 2024;7(3):e241777. doi:10.1001/jamanetworkopen.2024.1777. Accessed May 1, 2024. <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2815837>