

## Advancing Relevant Research

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### Introduction

The Global Neurosurgery Committee (GNC) of the World Federation of Neurosurgical Societies (WFNS) launched the Global Action Plan during the 2016 Bogota Declaration on Global Neurosurgery in Colombia in order to coordinate efforts and bring neurosurgeons around the world to address unmet neurosurgical care. The Global Action Plan contains five objectives <sup>1</sup> : Amplify, Align, Advance, Assimilate and Advocate for neurosurgical care. <sup>1</sup>. In this paper, we present the goals and the work of the Advance team. The goal of the Advance objective was to “A. Map research output by region and themes, B. Establish one or more Global Neurosurgery research grant and/or award mechanisms, C. Advocate for Global Neurosurgery category/sections in major neurosurgery journals (3 or more by 2021), D. Establish funding mechanisms for training in future leaders in the public health practice of Global Neurosurgery (2 or more by 2021), E. Inclusion of Global Neurosurgery Sessions in major neurosurgery meetings (>75% by 2021), F. Establish a mentoring relationship between editorial board members from HIC and LMICs (>1 by 2021), and G. Establish a mentoring relationship between authors from HIC and LMICs (>1 by 2021).” <sup>1</sup>

### Why is advancing research important?

Taking the initiative to increase the productivity and engagement of global neurosurgery research continues to be a significant aspect of the GNC mission. Research produced by collaborating team members from several GNC Targets exemplifies the ability of individuals with a common interest to succeed in creating impactful work which can have long-standing implications.

First, we need information about the current Global neurosurgery research output and understand some of the barriers and gaps in neurosurgery research, especially in low-and-middle-income countries (LMICs). The GNC set a goal to map research output by region and themes, this target has not been achieved in 2021, but there have been many ongoing efforts to reach this target. Ulricksidney et al published the following paper, “Mapping Global Neurosurgery Research Collaboratives: A Social Network Analysis of the 50 Most Cited Global Neurosurgery

Articles”. This work is the first research to identify key Global Neurosurgery Research authors, institutions, and themes. The paper also highlighted the research disparities between LMIC and HIC authors.<sup>2</sup>

GNC members have collectively highlighted neurosurgical disparities in LMICs in order to change these issues through further study, policy changes, and development of Academic programs which may increase the number of neurosurgical trainees available to provide care nationally. The importance of developing sustainable training models and strengthening health systems was addressed by Boyke et. al.<sup>3</sup> There is an ongoing survey study by WFNS Young Neurosurgery Forum assessing the global research climate.

### **Advocate for Global Neurosurgery category/sections in major neurosurgery journals.**

In 2020, Anthony T. Fuller reported increased publications of global neurosurgery research (GNR) in major neurosurgical journals, The majority of the articles (84 per cent) were published after 2010. World Neurosurgery was the journal that published the most articles about global neurosurgery, followed by the Journal of Neurosurgery: Pediatrics and Journal of Neurosurgery.

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The growth and reception of the Journal of Global Neurosurgery, an open-access journal first published in April 2021, represents the dedication of several professionals looking to contribute to the goal of provide timely, safe, and affordable neurosurgical care. Although this is an important milestone, further networking and academic engagement are needed to develop mentoring opportunities in research.

### **Inclusion of Global Neurosurgery Sessions in major neurosurgery meetings.**

The goal of this objective was to increase partnerships and networking between neurosurgeons in LMICs and high-income countries (HICs). Conferences provide a space for LMIC and HIC researchers to connect and share effective training and practice measures. Since 2015, the number of conferences involving global neurosurgery has increased, and entire conferences dedicated to global neurosurgery have been held. During the 5-year period from 2015 to 2020, a total of 19 conferences featured global neurosurgery sessions.<sup>5</sup> This is encouraging and implies that the field is growing. However, many of the major conferences are held in HICs, such as North America and Europe, which makes these conferences inaccessible to many LMIC researchers.<sup>5</sup> Creating funding mechanisms for LMIC researchers can help address this barrier and improve attendance from researchers around the globe.

The following GNC targets were established to increase research collaboration between LMICs and HICs and encourage knowledge sharing and establish mentoring relationships.

## **Establish a mentoring relationship between editorial board members from HIC and LMICs Establish a mentoring relationship between authors from HIC and LMICs. <sup>1</sup>**

Due to COVID and a lack of in-person meetings, the above targets have been difficult to implement. Although we have not yet established a formal mentoring program between authors from HIC and LMICs, we are hoping to achieve this goal via the Journal of Global Neurosurgery (JGNS). The Deputy Editor in Chief of the journal Dr Ignatius Esene is from Cameroon and the majority of the Associate Editors of the journal are from LMICs. The next steps in the future for this target will be to create a formal mentor-mentee survey form. We hope to match mentors and mentees based on interest and area of expertise. The new JGNS will have a capacity-building arm which will start in 2023, the arm will give an opportunity for mid-career LMIC neurosurgeons to join the journal and get mentorship. GNC mentoring program which aims to give a 2-year editorial training for LMICs neurosurgeons. This initiative has the potential to promote research equity and build a community of global neurosurgeons across the world. Other neurosurgical journals may also utilize this model.

## **Establish funding mechanisms for training in future leaders in the public health practice of Global Neurosurgery. Establish Global Neurosurgery research grant and/or award mechanisms. <sup>1</sup>**

Young researchers from LMICs face many barriers, including the lack of funding and protected research time. A major goal of the Advance target was to establish one or more Global Neurosurgery research grants and/or award mechanisms and to create 2 or more funds to train future leaders in the public health practice of Global Neurosurgery. The rationale behind these targets was to address some of the barriers LMIC neurosurgeons face. In this section, we will briefly highlight some funds (both current and new).

The WFNS Reference Centre Training Fund in Rabbat was created in 2002. This center supports residency training for LMIC neurosurgeons and provides financial support to trainees. Madjid Samii's Africa 100 scholarships initiative provides training and funding to young neurosurgeons from LMIC African countries. The Foundation for International Education in Neurological Surgery (FIENS) provides clinical training and supports LMIC neurosurgery. Through the FIENS- Bassett Global Neurosurgery Fellowship, LMIC neurosurgeons are offered a three-month observational rotation in FIENS-partnered institutions in North America, covering all travel and living expenses. Similarly, the FIENS Clack Family fellowship fund was created to support two LMIC trainees each year. The trainees receive a scholarship to complete their neurosurgical training in their respective countries.

Although there are some opportunities for clinical training for LMIC neurosurgeons, there are limited funds to support public health-oriented training. GNC's global action plan 1.0 set a goal to establish one or more Global Neurosurgery research grants and/or award mechanisms develop partnerships with other organizations and seek out funding sources to fund the training of neurosurgeons from LMICs in the public health aspects of neurosurgery (global neurosurgery).

To further expand this mission, the GNC global action plan now aims to create 2 or more funds to train future leaders in the public health practice of Global Neurosurgery.

In partnership with the Journal of Global Neurosurgery, The Neurosurgery Outreach Foundation (NOF) created the Global Neurosurgery Research Award, the award is for Neurosurgery research performed by researchers from LMICs. The JGNS will award three prizes for the top three papers from the second issue of the journal- pediatric neurosurgery. This award will increase productivity from LMIC researchers.

The Congress of Neurosurgical Surgeons (CNS) created the Harvard-Massachusetts General Neurosurgery International Observership in 2021, which was a scholarship for LMIC neurosurgeons to participate in three-month neurosurgery clinical and public health training. It consists of a \$20,000 award that will cover the recipient's travel and living expenses.<sup>6</sup> This is a hybrid program of clinical observations at Mass General Hospital (MGH) combined with a rotation at the Program in Global Surgery and Social Change (PGSSC) to obtain public health and advocacy training.<sup>6</sup> The first winner of the CNS grant will travel to Boston in June of 2022.

On July 1, 2022, the Barrow Global program will create the Franke fellowship which is a one-year funded training program in global health management and research, with 9 months in Tanzania and 3 months at Barrow Neurological Institute. While the award is limited to The Accreditation Council for Graduate Medical Education (ACGME)-accredited neurosurgical residents, it still highlights the shift towards a more public health-oriented approach to global neurosurgery.

Traditionally, most global neurosurgery funds are for clinical training, and there remains a huge gap in funds going towards public health training and the health system expansion. GNC has been working to raise funds to train global neurosurgeons on the public health aspects of neurosurgery such as building research capacity. Fortunately, new global neurosurgery funds are emerging every year, including the NOF research award, CNS and the Bassett fellowship. All three are from the United States and are geared towards funding LMIC beneficiaries and capacity building. It is encouraging to see the progress the Global neurosurgery community has achieved in creating ways to fund neurosurgeons; however, we need to look for more sustainable sources.

## **Conclusion**

Most global neurosurgery efforts remain geared towards clinical training. Through research, mentorship, and funding, GNC has focused heavily on expanding the neurosurgical workforce in LMICs. There remains a huge gap in funds that go towards public health training and the health system expansion. GNC continues to raise funds for global neurosurgeon training in the public health aspects of neurosurgery such as building research capacity. New global neurosurgery funds are emerging every year. New funding sources for global neurosurgery include the NOF research award, CNS and the Bassett fellowship. These resources are reliable catalysts in

increasing training and research. However, additional funding will be needed in the future as GNC initiatives become more fruitful.

## References

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