



**University of Toronto**

---

**From the Selected Works of Gustavo Saposnik**

---

February, 2022

# WSA Improving stroke care through medical education

Prof. Dr. Gustavo Saposnik, *University of Toronto Faculty of Medicine*



Available at: [https://works.bepress.com/gustavo\\_saposnik/135/](https://works.bepress.com/gustavo_saposnik/135/)

# The World Stroke Academy: A World Stroke Organization global pathway to improve knowledge in stroke care

International Journal of Stroke  
2022, Vol. 17(8) 829–834  
© 2022 World Stroke Organization



Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/17474930221085895  
journals.sagepub.com/home/wso



Gustavo Saposnik<sup>1</sup> , Laura Ceci Galanos<sup>2</sup>,  
Rodrigo Guerrero<sup>3</sup> , Florencia Casagrande<sup>4</sup>, Emili Adhamidhis<sup>5</sup>,  
Meah Ming Yang Gao<sup>1</sup>, Maria Fredin Grupper<sup>6</sup>, and Anita Arsovska<sup>7</sup>,  
On behalf of the World Stroke Academy Executive\*

## Abstract

**Background:** The World Stroke Academy (WSA) ([www.world-stroke-academy.org](http://www.world-stroke-academy.org)) is the educational platform of the World Stroke Organization (WSO). It facilitates educational activities (e.g. webinars and eLearning modules) and supports the WSO mission by providing high-quality stroke education to healthcare professionals. It provides evidence-based educational materials in a variety of formats to meet the needs of the WSO membership.

**Aim:** This article introduces the WSA, its core activities, and outlines how to access the many educational resources it offers.

**Results:** The WSA offers high-quality peer reviewed stroke education material and uses outcome metrics to assess and improve the quality of medical training of healthcare professionals. This article also highlights the importance of identifying knowledge and knowledge-to-action gaps through the creation of special projects and initiatives. It describes three areas in which the WSA has carried out recent educational initiatives, namely: life after stroke, women in stroke, and stroke checklist/pre-printed stroke orders.

**Conclusion:** WSA material is freely available, and we would encourage the global stroke community to use, and contribute to, its resources.

## Keywords

Stroke, cardiovascular, medical education, research, webinars, stroke care, knowledge, stroke education, e-learning, Stroke Academy

Received: 3 February 2022; accepted: 17 February 2022

## Introduction

Each year, there are 12.2 million new strokes worldwide, and 101 million people living with stroke aftermath. One in four people will have a stroke in their lifetime, a number that has increased 50% over the last 17 years.<sup>1,2</sup> The World Stroke Organization (WSO) is the only global body solely focused on stroke. With around 3000 individuals and 105 society members spanning every global region, the WSO represents over 55,000 stroke specialists in clinical, research, and community settings.<sup>2,3</sup> WSO is in official relation with the World Health Organization and has a United Nations Economic and Social Council (UN ECOSOC) consultative status, giving stroke profile and voice in the global health policy arena. The WSO works

<sup>1</sup>University of Toronto, Toronto, ON, Canada

<sup>2</sup>WSO, Amsterdam, The Netherlands

<sup>3</sup>Department of Neurology, Neurosurgery and Interventional Neuroradiology, Clínica Santa María, Santiago, Chile

<sup>4</sup>WSA, Buenos Aires, Argentina

<sup>5</sup>WSA, Toronto, ON, Canada

<sup>6</sup>World Stroke Organization, Geneva, Switzerland

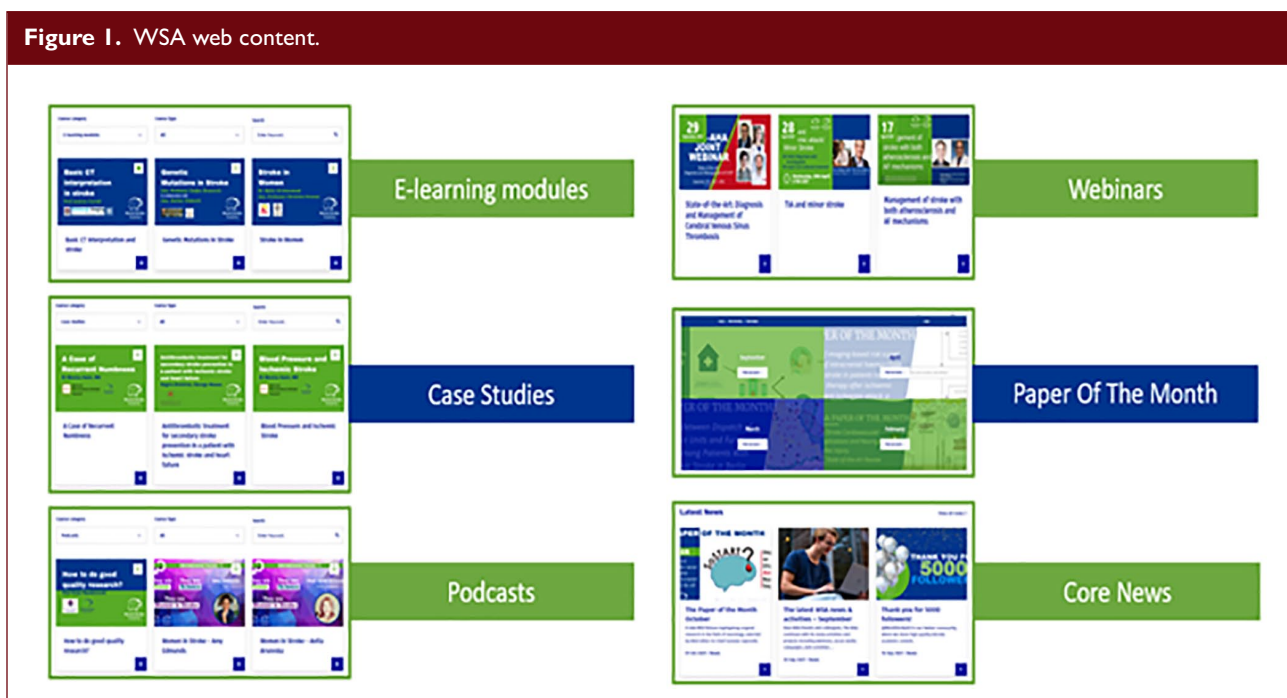
<sup>7</sup>Urgent Neurology, Faculty of Medicine, University Clinic of Neurology, University Ss. Cyril and Methodius, Skopje, North Macedonia

\*WSA executive members include Laura Ceci Galanos, Drs Andrew Demchuck, Deidre De Silva, Valeria Caso, Luciano Sposato, Monica Saini, Jose Merino, Anita Arsovska, and Gustavo Saposnik.

### Corresponding author:

Gustavo Saposnik, University of Toronto, 55 Queen St. E, Suite 931, Toronto, ON M5C 1R6, Canada.

Email: [Gustavo.saposnik@unityhealth.to](mailto:Gustavo.saposnik@unityhealth.to)



This figure describes all the educational content formats of the World Stroke Academy (links are in Table 2).

closely with global and regional policy makers to address key issues in health systems strengthening, prevention strategies and to improve access to healthcare. One of the ways that the WSO disseminates information on advances in stroke research and education and overcomes gaps in stroke care is through the use of the newly formed World Stroke Academy (WSA).

## What is the WSA?

The WSA is the educational platform of the WSO.<sup>4</sup> It facilitates educational activities (e.g. webinars and eLearning modules) and supports the WSO mission by providing high-quality stroke education to healthcare professionals.<sup>5</sup> It provides educational materials in a variety of formats to meet the needs of the WSO membership, with the support of the WSO Education and Research Committees and the WSO Connector programs. The WSA provides stroke information for healthcare professionals with an aim to alleviate the global burden of stroke through the education of stroke practitioners worldwide. It also supports the coordination of the WSO's online educational and promotional webinars, as well as various social media activities based on previous need assessment.<sup>6,7</sup>

The WSA Editorial team carries multiple responsibilities, from managing editorial decisions and leading strategic directions to effectively increase awareness, disseminate, and enhance the knowledge of stroke around the world in support of the WSO vision.<sup>8-10</sup> The WSA is a team that welcomes new ideas and fosters diversity of opinions to achieve excellence, composed by its Editor in Chief Dr Gustavo Saposnik, Executive Manager Laura Ceci Galanos, Associate Commissioning Editor

Dr Anita Arsovska, Social Media Leader Rodrigo Guerrero, Communication Specialist Florencia Casagrande, and Data Science Manager Emili Adhamidhis.

The WSA recently re-launched the newly designed Academy website, with the intention to host all educational materials, reviewed by WSA editors, WSA Leadership Group, WSO Education committee, and other bodies of the WSO. This upgraded platform is more user-friendly, enhancing learner engagement and utilizing advanced e-learning technology: [www.world-stroke-academy.org](http://www.world-stroke-academy.org)

The WSA vision to support the WSO mandate is based on the following principles:

- Teamwork, diversity, and collaboration.
- Facilitating access to practical and high-quality material relevant to our daily stroke practice.
- Improving communication among WSA, the *International Journal of Stroke* (IJS), and WSO to increase value for WSO members, colleagues, and the public.

The core educational elements of the Academy are e-learning modules, case studies, podcasts, webinars, webcasts from congresses, and papers of the month and core news (Figure 1), all covering: diagnosis, prevention, innovative therapies, acute treatment, neurorehabilitation, and life after stroke (see Table 1 for strengths and metrics).

At the WSA, we follow a peer-reviewed approach for every educational initiative (Figure 2).

Promotion on our dedicated platforms, Twitter and LinkedIn, is a key element of the Academy's role in

**Table 1.** WSA dissemination activities to overcome stroke care gaps.

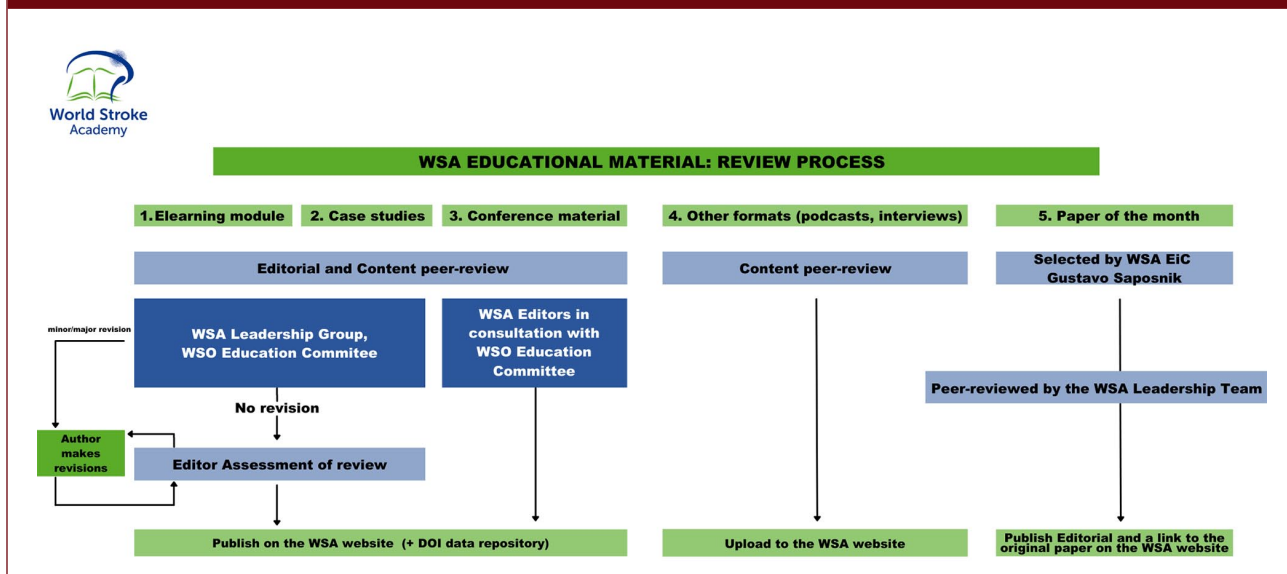
Format	Strengths	Metrics
Webinar	<ul style="list-style-type: none"> <li>• Global dissemination of key topics in stroke by experts in the field</li> <li>• Reach out larger audience</li> <li>• Live and interactive discussions</li> <li>• Fostering relationships within and outside the WSO</li> <li>• Enhancing branding value for WSO members</li> <li>• Joint webinars with other scientific organizations (e.g. AHA/ASA)</li> <li>• Contributing to WSO mission and vision</li> </ul>	<ul style="list-style-type: none"> <li>• Average of 850 registrations per webinar</li> <li>• Average of 250 attendees per webinar</li> <li>• Average 30 questions received in Q&amp;A section per webinar</li> <li>• Average rating of 4.6/5 webinar experience</li> <li>• 92% of participants per webinar state that their research or practice will be impacted following the webinars</li> <li>• Average of 725 webinar recording views</li> </ul>
e-Learning modules	<ul style="list-style-type: none"> <li>• Global dissemination of key topics in stroke</li> <li>• Summarize the current knowledge and future directions of relevant topics</li> <li>• Integration with an educational program</li> <li>• Easy accessibility with free content created by experts in the field</li> <li>• Enhancing branding value for WSO members</li> <li>• Contributing with WSO mission and vision</li> </ul>	<ul style="list-style-type: none"> <li>• Monthly average of 95 hits per module</li> <li>• 148 users have attempted or partially completed our e-learning modules</li> <li>• 15 modules have been completed with a passing average of 80% or more</li> </ul>
Podcasts	<ul style="list-style-type: none"> <li>• Short recordings from authors on controversial topics</li> <li>• Interactive interviews with take home messages</li> <li>• Participation of the WSO future leaders group</li> <li>• Convenient dissemination</li> </ul>	<ul style="list-style-type: none"> <li>• Average of 10 submissions per month</li> <li>• Average of 2 podcast uploads per month</li> <li>• Average of 100 views per podcast</li> </ul>
Editors paper of the month	<ul style="list-style-type: none"> <li>• Highlight recent publications in the field</li> <li>• Providing a different perspective with a global vision</li> <li>• Informing readers the current status of the literature</li> </ul>	<ul style="list-style-type: none"> <li>• 1 paper of the month, per month</li> <li>• Average of 160 hits per paper of the month</li> </ul>
Webcasts	<ul style="list-style-type: none"> <li>• Dissemination of selected lectures presented at international conferences (ESOC and WSC)</li> <li>• Facilitate partnerships with other scientific organizations (ESOC and AHA/ASA)</li> </ul>	<ul style="list-style-type: none"> <li>• Average of 10 webcast lectures uploaded per congress</li> <li>• Average of 70 hits per webcast</li> </ul>
Weekend lectures and Monday tips	<ul style="list-style-type: none"> <li>• Focused topics</li> <li>• Succinct updates and tips regarding stroke care</li> <li>• Short time of reading</li> <li>• Generates active discourse on stroke care for followers</li> </ul>	<ul style="list-style-type: none"> <li>• Average of 4 weekend lectures per month</li> <li>• Average of 4 Monday tips per month</li> <li>• Average of 60 retweets, 15 quote tweets, and 150 likes per post</li> </ul>
Special projects	<ul style="list-style-type: none"> <li>• Stroke checklist/pre-printed orders</li> <li>• Women in stroke</li> <li>• Life after stroke</li> </ul>	<ul style="list-style-type: none"> <li>• 10 quality stroke care checklist topics have been selected</li> <li>• 30 women in stroke podcasts, 1 e-learning module, and 1 webinar uploaded</li> <li>• Projections of 4 webinars, 4 e-learning modules, and 2 podcasts on life after stroke</li> </ul>

WSO: World Stroke Organization; AHA/ASA: American Heart Association/American Stroke Association; ESOC: European Stroke Organization Conference; WSC: World Stroke Congress.

advocacy and dissemination of information. On Twitter, the @WorldStrokeEd page has now reached over 6000 followers whereas the newly created LinkedIn page, World Stroke Academy, is steadily growing with 250 followers. Engaging activities such as #WeekendLectures and #MondayTips, spearheaded by our social media leader Rodrigo Guerrero, are followed and re-shared by hundreds of users weekly.

In terms of new initiatives, the Academy is involved in a variety of projects in collaboration with both the WSO's Future Stroke Leaders and the WSO Education Committee. Each initiative has a different format, ranging from evidence-based stroke care checklists to stroke diagnosis and management podcasts and life after stroke-based content. These initiatives are aligned with the WSO Roadmap to

**Figure 2.** WSA review process.



This figure reflects the algorithm for the review process of the educational material of the World Stroke Academy.

**Table 2.** Useful links.

Organizational	<ul style="list-style-type: none"> <li>World Stroke Organization: <a href="http://www.world-stroke.org">www.world-stroke.org</a></li> <li>World Stroke Academy: <a href="http://www.world-stroke-academy.org">www.world-stroke-academy.org</a></li> </ul>
Educational resources	<ul style="list-style-type: none"> <li>E-learning modules: <a href="https://www.world-stroke-academy.org/courses/?category=40">https://www.world-stroke-academy.org/courses/?category=40</a></li> <li>Case studies: <a href="https://www.world-stroke-academy.org/courses/?category=39">https://www.world-stroke-academy.org/courses/?category=39</a></li> <li>Podcasts: <a href="https://www.world-stroke-academy.org/courses/?category=43">https://www.world-stroke-academy.org/courses/?category=43</a></li> <li>Webinars: <a href="https://world-stroke-academy.org/webinars-overview/">https://world-stroke-academy.org/webinars-overview/</a></li> <li>Webcasts from Congresses: <a href="https://world-stroke-academy.org/webcasts/">https://world-stroke-academy.org/webcasts/</a></li> <li>WSA paper of the month: <a href="https://world-stroke-academy.org/wsa-monthly/past-issues/">https://world-stroke-academy.org/wsa-monthly/past-issues/</a></li> <li>WSO Roadmap: <a href="https://www.world-stroke.org/publications-and-resources/resources/roadmap-to-delivering-quality-stroke-care-resource">https://www.world-stroke.org/publications-and-resources/resources/roadmap-to-delivering-quality-stroke-care-resource</a></li> </ul>
Communication and social media	<ul style="list-style-type: none"> <li>WSA Twitter: <a href="https://twitter.com/WorldStrokeEd">https://twitter.com/WorldStrokeEd</a></li> <li>WSA LinkedIn: <a href="https://www.linkedin.com/showcase/world-stroke-academy-wsa">https://www.linkedin.com/showcase/world-stroke-academy-wsa</a></li> <li>WSA YouTube: <a href="https://www.youtube.com/c/WorldStrokeAcademyI">https://www.youtube.com/c/WorldStrokeAcademyI</a></li> <li>WSA Core News: <a href="https://www.world-stroke-academy.org/news/">https://www.world-stroke-academy.org/news/</a></li> </ul>
Submissions	<ul style="list-style-type: none"> <li>Webinar, e-learning, case study, podcast proposal submission form: <a href="https://form.jotform.com/212725774437058">https://form.jotform.com/212725774437058</a></li> </ul>

WSA: World Stroke Academy; WSO: World Stroke Organization.

deliver quality of stroke care. Some useful links are summarized in Table 2.

**Recent metrics**

Since its launch, the Academy counts over 2100 visitors from 110 different countries with an average of over 500 new users per month. The Twitter community of the @WorldStrokeEd account counts over 6000 followers and the newly created WSA LinkedIn page counts over 350 followers. The WSA webinars, covering different stroke related topics, attract an average of 850 registered users and a similar number of attendees per webinar.

**Special projects**

The WSA is undertaking special projects in a number of areas of need.

*Life after stroke*

With the aim to improve the quality of psychosocial support available to stroke survivors globally, the WSA is building an e-learning module and webinar series, hosted by key opinion leaders, on life after stroke. This area of research is often neglected in many countries and is equally



important for both stroke survivors and their families/caregivers.<sup>2,11,12</sup> There is lack of educational provision on the topic of life after stroke as well as lack of government attention to long-term support for stroke survivors despite what we know about their needs. We need to take actions to ensure stroke survivors are getting the best possible recovery (optimization of recovery) to achieve the best possible outcome, to build on scientific evidence,<sup>13</sup> to reduce the overall social costs<sup>14,15</sup> by introducing innovative strategies (e.g. public reporting of outcomes, use of validated risk prognostic scores, and implementing mobile stroke units and telestroke to deliver high-quality stroke care in underserved areas)<sup>16–18</sup> and preventing substantial hardship (reducing costs for governments to care for stroke survivors), and to create a community for Allied Health Professionals working with stroke survivors and caregivers.<sup>19</sup> The WSA aims to increase the awareness around the topic of life after stroke through the creation and dissemination of educational material, host key opinion leaders that can shed light on specific life after stroke-related topics, and answer outstanding questions on the conditions that occur in this segment of their life, such as spasticity, pain, depression, anxiety, feeling of helplessness, cognitive impairment, dementia, intimacy problems, family problems, working issues, and many more.

### Women in stroke

Women have unique characteristics when understanding the diagnosis and management of stroke.<sup>20–22</sup> Similarly, several colleagues made major contributions to the role of sex and gender differences in stroke care.<sup>20,21</sup> On International Women's Day, in March 2021, a brand-new initiative was launched by the WSA: #WomenInStroke. The goal was to highlight women in the field of stroke and recognize their contributions, research, and mentoring. This was a novel initiative developed and promoted/coordinated by women about women's empowerment in stroke care. Members of the WSO Board & Executive Committee were asked to nominate women who had contributed to one of the following areas of cerebrovascular diseases (basic science, clinical research, education, health policy, and advocacy). In total, 70 women representing all continents were nominated by their colleagues for their contribution to improve stroke care. The finalists were given an opportunity to do a written interview or a podcast. The WSA will continue building this important initiative and welcomes new educational material on this topic.

### Stroke checklist/pre-printed stroke orders

Checklists provide an organized way to condense a large quantity of knowledge into succinct, actionable items to improve information recall and guide users through

accurate task completion. Furthermore, checklists are an effective tool to consistently facilitate knowledge to practice translation by summarizing evidence into explicit actions.<sup>23–25</sup> They are currently widely used as cognitive aids in both medical and non-medical fields. Examples in medicine include the use of surgical safety checklists and standardized order sets.<sup>26,27</sup> The previous literature has shown that carefully developed and well-implemented checklists are effective in error prevention, standardization of management, and performance improvement in patient care.<sup>23–25</sup> Clinical guidelines and best practices in stroke have been established and published by several professional organizations worldwide. However, these publications are not applicable to everyone as they are primarily based on standard practices in developed countries with established infrastructure and resources.<sup>28–30</sup>

Stroke care providers in low-resource settings face challenges due to limited access to diagnostic and treatment options, and actionable, high-quality evidence that can be adapted to local settings.<sup>31</sup> In this project, we are developing *stroke care checklists* with an emphasis on supportive care strategies, validated by international experts and accessible to a global audience. Our expectation is that this clinical tool could facilitate consistent stroke care delivery in areas and regions with limited resources, ultimately ensuring adherence to best practice developed by the WSO, reducing variability in management, and improving overall stroke care.

In conclusion, to quote Joel Barker, an American businessman: "Vision without action is a dream. Action without vision is simply passing time. Action with vision is making a positive difference." By sharing a unified vision, we, the WSA, are looking forward to working together in supporting WSO's mission of making a difference in improving stroke care globally.

### Acknowledgements

The authors are very grateful for the leadership of the WSA Founders Prof. Michael Brainin and Prof. Peter Sandercock. Without their initiative, the WSA would not have thrived. The authors of this article are grateful to WSO Assistant Association Manager *Gergana Raleneva*, WSO Future Stroke Leaders Program Coordinator *Julia Shapranova*, SSO Committee Chairs *Michelle Nelson* and *Sharon McGowan*, and Education Committee Chairs *Gord Gubitz*, *Monica Saini*, and *Ramesh Sahathevan*.

### Declaration of conflicting interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Laura Ceci Galanos (Executive Manager WSA), Dr Gustavo Saposnik (Editor in Chief WSA), and Mia Fredin Grupper (Executive Director WSO) are supported by the World Stroke Organization.

### Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

## ORCID iDs

Gustavo Saposnik  <https://orcid.org/0000-0002-5950-9886>

Rodrigo Guerrero  <https://orcid.org/0000-0002-5634-7535>

## References

- Virani SS, Alonso A, Aparicio HJ, et al. Heart disease and stroke statistics— 2021 update. *Circulation* 2021; 143: e254–e743.
- Feigin VL, Brainin M, Norrving B, et al. World Stroke Organization (WSO): global stroke fact sheet 2022. *Int J Stroke* 2022; 17: 18–29.
- Markus HS, Brainin M and Fisher M. Tracking the global burden of stroke and dementia: World Stroke Day 2020. *Int J Stroke* 2020; 15: 817–818.
- Brainin M. World Stroke Academy revamped. *Int J Stroke* 2013; 8: 59.
- Markus HS and Saposnik G. Improving stroke care through education: the World Stroke Academy. *Int J Stroke* 2020; 15: 703.
- Gubitza G, Saini M, Belson S, et al. How can the World Stroke Organization (WSO) optimize education in stroke medicine around the world? Report of the 2018 WSO Global Stroke Stakeholder Workshop. *Int J Stroke* 2019; 14: 803–805.
- Saini M, Belson S, Lahiff-Jenkins C, et al. Top 10 global educational topics in stroke: a survey by the World Stroke Organization. *Int J Stroke* 2019; 14: 843–849.
- American Association of Neurological Surgeons (AANS), American Society of Neuroradiology (ASNR), Cardiovascular and Interventional Radiology Society of Europe (CIRSE), Canadian Interventional Radiology Association (CIRA), Congress of Neurological Surgeons (CNS), European Society of Minimally Invasive Neurological Therapy (ESMINT), European Society of Neuroradiology (ESNR), European Stroke Organization (ESO), Society for Cardiovascular Angiography and Interventions (SCAI), Society of Interventional Radiology (SIR), Society of NeuroInterventional Surgery (SNIS), and World Stroke Organization (WSO), et al. Multisociety consensus quality improvement revised consensus statement for endovascular therapy of acute ischemic stroke. *Int J Stroke* 2018; 13: 612–632.
- Brainin M, World Stroke O, Sliwa K, et al. WSO and WHF joint position statement on population-wide prevention strategies. *Lancet* 2020; 396: 533–534.
- Meretoja A, Acciarresi M, Akinyemi RO, et al. Stroke doctors: who are we? A World Stroke Organization survey. *Int J Stroke* 2017; 12: 858–868.
- Kernan WN, Viera AJ, Billinger SA, et al. Primary care of adult patients after stroke: a scientific statement from the American Heart Association/American Stroke Association. *Stroke* 2021; 52: e558–e571.
- Rudberg AS, Berge E, Laska AC, et al. Stroke survivors' priorities for research related to life after stroke. *Top Stroke Rehabil* 2021; 28: 153–158.
- Wongergem R, Pisters MF, Wouters EJ, et al. The course of physical functioning in the first two years after stroke depends on peoples' individual movement behavior patterns. *Int J Stroke* 2022; 17: 83–92.
- Kaur P, Kwatra G, Kaur R, et al. Cost of stroke in low and middle income countries: a systematic review. *Int J Stroke* 2014; 9: 678–682.
- Craig LE, Wu O, Bernhardt J, et al. Approaches to economic evaluations of stroke rehabilitation. *Int J Stroke* 2014; 9: 88–100.
- Kim J, Easton D, Zhao H, et al. Economic evaluation of the Melbourne Mobile Stroke Unit. *Int J Stroke* 2021; 16: 466–475.
- Bhattarai N, Price CI, McMeekin P, et al. Cost-effectiveness of an enhanced Paramedic Acute Stroke Treatment Assessment (PASTA) during emergency stroke care: economic results from a pragmatic cluster randomized trial. *Int J Stroke* 2021; 17: 282–290.
- Ewara EM, Isaranuwachai W, Bravata DM, et al. The iScore predicts total healthcare costs early after hospitalization for an acute ischemic stroke. *Int J Stroke* 2015; 10: 1179–1186.
- Tyagi S, Koh GC, Nan L, et al. Healthcare utilization and cost trajectories post-stroke: role of caregiver and stroke factors. *BMC Health Serv Res* 2018; 18: 881.
- Kapral MK and Bushnell C. Stroke in women. *Stroke* 2021; 52: 726–728.
- Arnao V, Acciarresi M, Cittadini E, et al. Stroke incidence, prevalence and mortality in women worldwide. *Int J Stroke* 2016; 11: 287–301.
- Gong J, Harris K, Tzourio C, et al. Sex differences in predictors for cognitive decline and dementia in people with stroke or transient ischemic attack in the PROGRESS trial. *Int J Stroke* 2022; 17: 861–870.
- Clinkard D, Moulton E, Holden M, et al. Assessment of lumbar puncture skill in experts and nonexperts using checklists and quantitative tracking of needle trajectories: implications for competency-based medical education. *Teach Learn Med* 2015; 27: 51–56.
- Griffith PB, Doherty C, Smeltzer SC, et al. Education initiatives in cognitive debiasing to improve diagnostic accuracy in student providers: a scoping review. *J Am Assoc Nurse Pract* 2020; 33: 862–871.
- Meinema JG, Buwalda N, van Etten-Jamaludin FS, et al. Intervention descriptions in medical education: what can be improved? A systematic review and checklist. *Acad Med* 2019; 94: 281–290.
- Storesund A, Haugen AS, Flaatten H, et al. Clinical efficacy of combined surgical patient safety system and the World Health Organization's checklists in surgery: a nonrandomized clinical trial. *JAMA Surg* 2020; 155: 562–570.
- Sleiman B, Sayeed Z, Padela MT, et al. Review article: current literature on surgical checklists and handoff tools and application for orthopaedic surgery. *J Orthop* 2019; 16: 86–90.
- Loezar C, Perez-Bracchiglione J, Arancibia M, et al. Guidelines in low and middle income countries paper 2: quality assessment of Chilean guidelines—need for improvement in rigor, applicability, updating, and patients' inclusion. *J Clin Epidemiol* 2020; 127: 177–183.
- Dans LF, Salaveria-Imperial MLA, Miguel RTD, et al. Guidelines in low and middle income countries paper 3: appraisal of Philippine clinical practice guidelines using appraisal of guidelines for research and evaluation II—improvement needed for rigor, applicability, and editorial independence. *J Clin Epidemiol* 2020; 127: 184–190.
- Pandian JD, Panagos PD, Sebastian IA, et al. Maintaining stroke care during the COVID-19 pandemic in lower- and middle-income countries: World Stroke Organization Position Statement endorsed by American Stroke Association and American Heart Association. *Int J Stroke* 2022; 17: 9–17.
- Harrison MB, Légaré F, Graham ID, et al. Adapting clinical practice guidelines to local context and assessing barriers to their use. *CMAJ* 2010; 182: E78–E84.