



University of Toronto

From the Selected Works of Gustavo Saposnik

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



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Curriculum Vitae

Gustavo Saposnik

A. Date Curriculum Vitae is Prepared: 2021 April 28

B. Biographical Information

Primary Office	St. Michael's Hospital 55 Queen Street East 9 Fl - Rm 931 Toronto, Ontario, Canada M5C 1R6
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1. EDUCATION

Degrees

2015 Feb - 2020 Aug	PhD, Neuroeconomics (Decision Neuroscience), Economics, University of Zurich, Zurich, Zürich (de), Switzerland, Supervisor(s): Philippe Tobler, Christian Ruff
2000 - 2003	MPH, Public Health, Epidemiology, Biostatistics, University of Buenos Aires & Harvard School of Public Health, Buenos Aires, Buenos Aires, Argentina, Supervisor(s): Dr. Fernando Rubinstein
1996	Board certification in Neurology, Neurology (Honours), National Board of Medical Examiners in Neurology, University of Buenos Aires, Buenos Aires, Buenos Aires, Argentina
1990	MD (Honours), University of Buenos Aires, Buenos Aires, Buenos Aires, Argentina, Supervisor(s): NA
1985 Mar - 1990 Dec	MD, Buenos Aires, Argentina

Postgraduate, Research and Specialty Training

2015 Feb - 2020 Aug	PhD candidate, Department of Economy, University of Zurich, Zürich (de), Switzerland, Supervisor(s): Dr. Christian Ruff & Philippe Tobler
2003 - 2006	Postdoctoral Clinical Stroke Fellow, Stroke Program, Department of Neurology, London Health Sciences Centre, University of Western Ontario, London, Ontario, Canada, Supervisor(s): Dr. Vladimir Hachinski
2000 - 2003	Master applicant, Public Health, Clinical Effectiveness Program, University of Buenos Aires & Harvard School of Public Health, Buenos Aires, Capital Federal, Argentina, Supervisor(s): Dr. R. Rubinstein & Ezequiel Garcia Elorrio
1999 - 2000	Postdoctoral Research Stroke Fellow, Stroke Program, Department of Neurology, Beth Israel Medical Center, Harvard University, Boston, Massachusetts, Supervisor(s): Dr. Louis Caplan
1997 - 1999	Clinical Stroke Fellow, Stroke Program, Department of Neurology, Ramos Mejia Hospital, University of Buenos Aires, Buenos Aires, Buenos Aires, Argentina, Supervisor(s): Dr. Raul

C. Rey

- 1996 - 1997 Chief Neurology Resident, Neurology, Department of Neurological Sciences, University of Buenos Aires, Buenos Aires, Buenos Aires, Argentina
- 1993 - 1996 Neurology Resident, Neurology, Department of Neurological Sciences, University of Buenos Aires, Buenos Aires, Buenos Aires, Argentina
- 1991 - 1993 Resident, Internal Medicine, Dept of Medicine, University of Buenos Aires, Buenos Aires, Buenos Aires, Argentina
- 1990 - 1991 Resident, Internal Medicine, University of Buenos Aires, Buenos Aires, Buenos Aires, Argentina

Qualifications, Certifications and Licenses

- 2011 Dec - present FRCPC, Neurology, Royal College of Physicians and Surgeons of Canada, Toronto, Ontario, Canada
- 2006 Jul - present Academic License, Neurology, CPSO, Toronto, Ontario, Canada, License / Membership #: # 79371
- 1997 - present Certification in Neurology, Neurology, National Ministry of Health, Buenos Aires, Buenos Aires, Argentina, License / Membership #: # 82249
- 1996 May - present Certification on Neurology, Neurology, University of Buenos Aires, Buenos Aires, Buenos Aires, Argentina, License / Membership #: # 82249
- 2015 Feb - 2020 Aug Doctorate in Neuroeconomics (Decision Neuroscience), Neuroeconomics, University of Zurich, Zurich, Zürich (de), Switzerland
- 2003 Jul - 2006 Jun Educational License, Neurology, CPSO, Toronto, Ontario, Canada, License / Membership #: # 79371

2. EMPLOYMENT

Current Appointments

- 2020 Jun - present Editor-in-Chief, World Stroke Academy (WSA), World Stroke Organization (WSO), Geneva, Genève (fr), Switzerland
World Stroke Organization
- 2011 Jul 1 - present Associate Professor in Medicine, Division of Neurology, Department of Medicine, University of Toronto, Ontario, Canada
St. Michael's Hospital
- 2010 Jun 14 - present Associate Member, Heart and Stroke Foundation Canadian Partnership for Stroke Recovery, Toronto, Ontario, Canada
- 2010 - present Consultant Reviewer, Exceptional Access Program, Ontario Ministry of Health and Long Term Care, Toronto, Ontario, Canada
- 2009 - present Adjunct Scientist, University of Toronto, Institute of Clinical Evaluative Sciences (ICES), Toronto, Ontario, Canada
- 2007 Jul 1 - present Scientist, Li Ka Shing Knowledge Translation Institute, Toronto, Ontario, Canada
- 2007 - present Chair, Stroke Outcome Research Canada (SORCan) Working Group, Toronto, Ontario, Canada
- 2007 - present Director, Stroke Outcomes Research Center, Division of Neurology, Department of Medicine, University of Toronto, Ontario, Canada
- 2007 - present Associate Professor, Institute of Health Policy, Management and Evaluation (iHPME), University of Toronto, Toronto, Ontario, Canada
- 2006 Jul 1 - present Staff physician, Division of Neurology, Department of Medicine, St. Michael's Hospital, Toronto, Ontario, Canada
- 2006 - present Scientist, Mobile Clinical Research Unit, St. Michael's Hospital, Toronto, Ontario, Canada

Division of Neurology, Department of Medicine, University of Toronto

2006 - present
Director, Clinical Outcomes & Decision Neuroscience Unit, Division of Neurology, Li Ka Shing Knowledge Institute, St Michael's Hospital, University of Toronto, University of Toronto, Toronto, Ontario, Canada
Dr. Saposnik is the lead and scientific director of the Clinical Outcomes & Decision Neuroscience Unit.
He and his team apply innovative strategies and cutting-edge technologies that target physician and patient's knowledge, care, and decision-making by applying concepts from behavioral economics and neuroeconomics that are adopted and integrated within our healthcare system.

Previous Appointments

CLINICAL

2012 Jun - 2018 Board Member, Stroke Oversight Committee, American Heart Association (AHA), Dallas, United States

CONSULTING

2015 Jul 1 - 2018 Jun Board Member, Quality Stroke Ontario, Ontario, Canada

HOSPITAL

2001 - 2003 Co-Director, Stroke Unit, Clinical and Research, Division of Neurology, Department of Medicine, Faculty of Medicine, Ramos Mejia University Hospital, Buenos Aires, Buenos Aires, Argentina

1999 Jun - 2003 May Outpatient Attending Neurologist, Neurology, Ramos Mejia, Buenos Aires, Buenos Aires, Argentina

1999 - 2002 Associate Neurologist, Centro Neurologico Buenos Aires, Buenos Aires, Buenos Aires, Argentina

1998 - 2003 Junior Staff Neurologist, Division of Neurology, Department of Medicine, Ramos Mejia University Hospital, Buenos Aires, Argentina

1998 - 2003 Staff Neurologist, Department of Organ Procurement for Transplantation, Garrahan University Hospital, Buenos Aires, Argentina

1996 - 1998 Housestaff, Neuro-ICU physician, Neurocritical Care Unit, FLENI, Buenos Aires, Argentina

RESEARCH

2005 - 2006 Project Manager, Waiting times in EDs, Health Service Research Unit, Canadian Institute for Health Information (CIHI), Toronto, Ontario, Canada
Division of Health Service Research and Health Indicators

UNIVERSITY

2006 Jul 1 - 2011 Jun 30 Assistant Professor in Medicine, Stroke Program, Division of Neurology, Department of Medicine, University of Toronto, Ontario, Canada
St. Michael's Hospital

1999 - 2004 Lecturer, Department of Medicine, Division of Neurology, Ramos Mejia University Hospital, University of Buenos Aires (UBA)

1987 - 1994 Teaching Assistant, Department of Histology and Cellular Biology, School of Medicine, University of Buenos Aires (UBA)

UNIVERSITY - CROSS APPOINTMENT

2015 Jul 1 - 2016 Jun 30 Professor of Neurology, Neurology, Fundación Favaloro, Ciudad Autónoma de Buenos Aires, Argentina

2000 - 2004 Lecturer, Organ Procurement for Transplantation, University of Buenos Aires (UBA), Garrahan University Hospital, Buenos Aires, Buenos Aires, Argentina

3. HONOURS AND CAREER AWARDS

Distinctions and Research Awards

INTERNATIONAL

Received

- 2020 Dec - present **Magna Cum Laude**, PhD, University of Zurich, Zurich, Zürich (de), Switzerland. (Distinction, Specialty: Neuroeconomics)
- 2018 Sep **AHA Ian G. Jacobs Award for International Group Collaboration to Advance Resuscitation Science**, AHA, United States. (Research Award)
International Group Collaboration for developing Guidelines for the management of patients post-cardiac arrest.
- 2014 Nov **International Visiting Scholarship**, Visiting Scholar- Review research platform & projects and give lectures to undergraduate, postgraduate and faculty members. Mahidol University, Bangkok, Nakhon Phanom, Thailand. (Visiting Scholar, Specialty: Stroke)
Total Amount: 5,000 CAD
- 2014 Nov **Subirana Oller Recognition Award**, Spanish Neurological association, Valencia, Spain. (Subirana Oller Recognition Award, Specialty: Stroke)
Total Amount: 900 EUR
- 2003 **International Fellowship Award**, American Academy of Neurology, Denver, Colorado, United States. (Distinction)
Peer review award to receive full support to attend to the 55th AAN Meeting in Denver. Total Amount: 2,500
- 2001 - 2003 **Scientific Award in Epidemiology**, Principal Investigator, Roemmers Foundation, Buenos Aires, Buenos Aires, Argentina. (Distinction)
Project: "Epidemiology of Stroke: risk factors and ethnicity". Collaborators: Dr Leonardo Gonzalez, Dr. Raul Rey, Dr. Roberto Sica. Total Amount: 6,600

NATIONAL

Received

- 2017 Jul - 2021 Jun **Mid-career Scientist Award**, Heart and Stroke Foundation of Canada (HSFC), Ontario, Canada. (Research Award, Specialty: Stroke)
Total Amount: 320,000 CAD
- 2012 Oct **Chair's Impact Award**, Canadian Stroke Congress, Ontario, Canada. (Research Award, Specialty: Stroke)
- 2012 Jul - 2017 Jul **Distinguished Clinician Scientist Award**, Heart and Stroke Foundation of Canada (HSFC), Ontario, Canada. (Research Award, Specialty: Stroke)
Total Amount: 500,000 CAD
- 2012 Jul - 2017 Jul **MacDonald Scholarship**, Heart and Stroke Foundation of Canada (HSFC), Ontario, Canada. (Research Award, Specialty: Stroke)
- 2012 Jul - 2017 Jul **New Investigator Award**, Canadian Institute for Health Research (CIHR), Ontario, Canada. (Research Award, Specialty: Stroke)
Declined for accepting the HSF Distinguished Scientist Award. Total Amount: 300,000 CAD
- 2008 Jul - 2011 Jun **Clinician Scientist Award**, Heart and Stroke Foundation Ontario (HSFO), Ontario, Canada. (Research Award)
Premature risk of stroke associated with regency of immigration in Ontario (PRESARIO) 3 Years; 50 K/year. 2008-2011. Total Amount: 192,000 CAD
- 2004 Jul - 2007 Jun **Focus in Stroke Fellowship Award**, Heart and Stroke Foundation & Canadian Institute for Health Research (CIHR), Ontario, Canada. (Research Award)

Total Amount: 165,000 CAD

LOCAL

Received

- 2021 Jul - 2023 Jun **Clinician-Scientist Award**, Unity Health, Ontario, Canada. (Research Award)
Based on publications, grants, and impact. Total Amount: 60,000 CAD
- 2020 Dec **Stroke Standards of Care Quality Improvement Award**, Toronto Stroke Network, Ontario, Canada. (Standards of Care Quality Improvement Award, Specialty: Stroke)
- 2017 Jul - 2020 Jun **Clinician-Scientist Merit Award**, University of Toronto, Ontario, Canada. (Research Award)
Declined for being the recipient of the HSFC Career Scientist Award. Total Amount: 120,000 CAD
- 2004 **Best Presentation Award**, Department of Neurological Sciences, University of Western Ontario, London, Ontario, Canada. (Distinction)
Postgraduate Awards Committee for studies in postgraduate medical research. Research Study: "Lack of improvement after thrombolysis for acute stroke" (Diploma). Total Amount: 500

OTHER

Received

- 2008 Jun **Best Poster**, Presenter and Principal author, Mobility Program, Toronto, Ontario, Canada. (Distinction)
Best poster Presentation - Escalating Levels of Access to In-Hospital Care and Stroke Mortality.
- 2007 - 2009 **Connaught Matching Grant Award**, University of Toronto, Toronto, Ontario, Canada. (Distinction)
Project: Health System Determinants of Stroke Outcome. Total Amount: 12,500
- 2000 **Scientific Research Award**, Neurological Society of Argentina, Buenos Aires, Argentina. (Distinction)
Best Clinical Research Study. Total Amount: 1,500
- 1999 - 2001 **Postdoctoral International Fellowship**, Government of Argentina, Boston, Massachusetts, United States. (Distinction, Specialty: Stroke)
Scientific Research Scholarship from the National Ministry of Culture and Education obtained by a competitive application. Project: "Epidemiology of Stroke". Supervisor: Dr. Louis Caplan. Total Amount: 15,000
- 1997 - 1999 **FITEN Fellowship Award**, Stroke clinical fellow, Ramos Mejia University Hospital. University of Buenos Aires. Buenos Aires, Buenos Aires, Argentina. (Distinction)
Postdoctoral Fellowship in Cerebrovascular disease. Supervisor: Dr. Raul C. Rey. Total Amount: 14,000
- 1997 **Honour Diploma**, School of Medicine. University of Buenos Aires, Buenos Aires, Buenos Aires, Argentina. (Distinction, Specialty: Medicine)
(Academic excellence).

Teaching and Education Awards

LOCAL

Received

- 2010 Jul - 2011 Jun **Neurology Faculty Teaching Award**, Neurology, Dept of Medicine, Faculty of Medicine,

4. PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Professional Associations

2010 Jun 14 - present	Associate Member , Heart and Stroke Foundation Centre for Stroke Recovery
2007 - present	Fellow , American Heart Association, 142163334
2005 - present	Member , International Stroke Society (ISS)
2004 - present	Member , Canadian Stroke Consortium (CSC)
2004 - present	Member , Canadian Stroke Network (CSN)
2004 - present	Member , Ontario Medical Association (OMA)
2003 - present	Member , Canadian Medical Protective Association (CMPA)
2003 - present	Member , College of Physicians and Surgeons Ontario (CPSO)
2002 - present	Member , Association of Organ Procurement for Transplantation (APProAT)
1999 - present	Member , Critical care group, World Federation of Neurology (CC-WFN)
1998 - present	Founder member , Iberoamerican Society of Cerebrovascular disease
1996 - present	Member , American Academy of Neurology (AAN)
1994 - present	Member , Argentinean Neurological Society (SNA)
2020 Oct	Executive Board member , World Stroke Organization
2012 Jun - 2018	Board Member , Stroke Oversight Committee, American Heart Association

Administrative Activities

INTERNATIONAL

Other Organizations

2007 Jul 1 - present **Chair**, Stroke Outcome Research Canada (SORCan) Working Group
Scientific Advisory Boards.

American Heart Association (AHA)

2014 Apr - 2017 Apr **Co-Chair**, Special Writing Group on the Diagnosis and Management of Silent Stroke, United States.
Scientific Advisory Boards.

2008 Jul - 2011 Jun **Chair**, Special Writing Group on the Diagnosis and Management of Cerebral Venous Thrombosis of the American Heart Association Stroke Council (AHA)
Scientific Advisory Boards.

NeuroEconSolutions.com

2019 Jun - present **Director**, Founder and CSO, Toronto, Ontario, Canada.
Scientific Advisory Boards.

World Stroke Organization

2020 Jun - present **Editor-in-Chief**, Editor-in-Chief, World Stroke Academy, Switzerland.
Scientific Advisory Boards.

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NATIONAL

Canadian Stroke Network

2007 Jul 1 - 2008 Jun 30 **Member**, Canada.
Panel Member, Indicators of Quality of Stroke Care.

PROVINCIAL / REGIONAL

Other Organizations

2007 May 1 - present **Member**, Registry Canadian Stroke Network, Canada.

2007 Jul 1 - 2009 Jun 30 **Member**, Ontario Stroke System
Scientific Advisory Boards.

Institute of Health Policy Management and Evaluation (iHPME)

2016 Feb **Chair**, Behavioral Economics and Health Care
Scientific Advisory Boards.

2014 Feb **Chair**, Behavioral Economics and Health Care
Scientific Advisory Boards.

LOCAL

Li Ka Shing Knowledge Institute

2008 Jul - present **Chair**, Stroke Research Rounds, Toronto, Ontario, Canada.
Scientific Advisory Boards.

St Michael's Hospital

2008 Jul - present **Chair**, Stroke Journal Club, Toronto, Ontario, Canada.
Scientific Advisory Boards.

OTHER

Other Organizations

2007 Jul 1 - 2008 Jun 30 **Co-Chair**, Operating Stroke Committee
Hospital.

2005 **Member**, Science Advisory Board (SAB) studies
Scientific Advisory Boards.

Canadian Stroke Consortium (CSC)

2004 - present **Research Protocol Reviewer**

Emergency Care. Government of Buenos Aires

2001 - 2002 **Advisory Board member**, Health Professionals Advisory Sub-Committee for the creating of
Stroke Units

Iberoamerican Society of Cerebrovascular disease

2001 - 2003 Steering Committee

Institute of Clinical Evaluative Sciences (ICES)

2005 **Advisory Panel member**, "Quality of care indicators for Stroke Prevention care in Canada"

Gustavo SAPOSNIK

Ramos Mejia University Hospital (Local Committee)

2003 - 2006 **Member (Neurologist)**, Organ Procurement for Transplantation
Scientific Advisory Boards.

Peer Review Activities

ASSOCIATE OR SECTION EDITING

Editor

2015 Jun - present STROKE, the official Journal of the AHA

Guest Editor

2010 - present Neurology Research International

Member, Writing Group

2012 Oct - 2014 Oct AHA, AHA Statement on Stroke Prevention and Care in Women

2012 Sep - 2014 Sep AHA, AHA Statement on Palliative Care and end of life decisions after Stroke

EDITORIAL BOARDS

Member

2013 Mar - present International Journal of Stroke

2009 - present Journal of Stroke & Cerebrovascular Diseases

2001 - present STROKE

Reviewer

2003 Jul - present Stroke, Number of Reviews: 113

2009 Jul 1 Journal of Stroke and Cerebrovascular Diseases, Number of Reviews: 1

GRANT REVIEWS

Reviewer

2017 Jul - present Number of Reviews: 5

2010 - present Ministry of Health (Singapore), Number of Reviews: 2

2010 - present PSI Foundation

2008 Sep - 2008 Nov HSFO/Ontario Stroke Strategy, Number of Reviews: 37

2007 Sep - 2007 Nov HSFO/Ontario Stroke Strategy, Number of Reviews: 23

MANUSCRIPT REVIEWS

Reviewer

2014 - present PLOS Medicine, Number of Reviews: 2

2013 - present Lancet, Number of Reviews: 3

2011 - present Annals of Neurology, Number of Reviews: 2

2011 - present Journal of Thrombosis and Hemostasis, Number of Reviews: 1

2010 - present Archives of Physical Medicine and Rehabilitation, Number of Reviews: 1

2010 - present BMJ, Number of Reviews: 2

2009 Dec - present Cerebrovascular Diseases, Number of Reviews: 1

2009 Dec - present International Journal of Stroke, Number of Reviews: 3

2009 Nov - present BMC Neurology, Number of Reviews: 2

2009 Oct - present BMC Medicine, Number of Reviews: 3

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2009 May 1 - present	CIRCULATION, Number of Reviews: 5
2009 May - present	Journal of Neurology, Number of Reviews: 1
2008 Sep - present	LANCET NEUROLOGY, Number of Reviews: 4
2008 - present	Journal of Stroke & Cerebrovascular Diseases, Number of Reviews: 18
2007 - present	Archives of Internal Medicine, Number of Reviews: 2
2007 - present	CNS Drugs, Number of Reviews: 1
2006 - present	The Lancet, Number of Reviews: 2
2005 - present	Journal of Neurology, Neurosurgery and Psychiatry (JNNP), Number of Reviews: 3
2005 - present	NEUROLOGY, Number of Reviews: 20
2004 - present	Canadian Medical Association Journal (CMAJ), Number of Reviews: 2
2004 - present	JAMA (Journal of American Medical Association), Number of Reviews: 4
2004 - present	Journal of Neurological Sciences (J Neurol Sci.), Number of Reviews: 3
2004 - present	Neurology India, Number of Reviews: 6
2003 - present	European Journal of Neurology (Eur J Neurol.), Number of Reviews: 1
2001 - present	Arquivos Neuropsiquiatria (Arq. Neuropsiquiatr.), Number of Reviews: 3
2001 - present	Revista Neurologia (Rev. Neurol.), Number of Reviews: 3
2000 - present	STROKE, Number of Reviews: 153

ABSTRACT

Reviewer

2010 - present International Stroke Conference 2010, 2011, 2012, 2013

ABSTRACT GRADING SUBCOMMITTEE

Abstract Reviewer

2010 - 2015 American Heart Association, International Stroke Conference

APPLICATIONS REVIEWER

Reviewer

2008 Sep - present Heart & Stroke Foundation of Canada, Number of Reviews: 3

AUTHOR MENTORSHIP PROGRAM

Editor

2008 Jul - present Stroke Journal

CHAIR, A SCIENTIFIC STATEMENT FOR HEALTH PROFESSIONALS FROM A SPECIAL WRITING GROUP OF THE AMERICAN HEART ASSOCIATION STROKE COUNCIL (AHA)

Chair

2008 Jul - present American Heart Association (AHA), Diagnosis and Management of Cerebral Venous Sinus Thrombosis.

INTERNATIONAL ASSOCIATE EDITOR

Reviewer

2007 - present Acta Neurologica Colombiana

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POSTER MODERATOR

Moderator

2010 Feb 25

San Antonio, USA, International Stroke Conference, Number of Reviews: 12

WORLD STROKE ACADEMY

Editor

2020 Jun - present

Educational platform of the World Stroke Organization (WSO)

Other Research and Professional Activities

RESEARCH PROJECT

2021 April 12

Member Writing Group. AHA writing group: Scientific Statement of Cerebral Venous Thrombosis and Covid-19 vaccines. American Heart Association, United States. Collaborator(s): Furie K, **Saposnik G**, Elkind M, Cushman M, Leiden P; American Heart Association Stroke Council.

2016 Dec 15

Co-Chair Writing Group. Member of the AHA writing group: Scientific Statement for the Management of Silent Stroke. American Heart Association, United States. Collaborator(s): Smith EE, **Saposnik G**, Biessels GJ, Doubal FN, Fornage M, Gorelick PB, Greenberg SM, Higashida RT, Kasner SE, Seshadri S; American Heart Association Stroke Council; Council on Cardiovascular Radiology and Intervention; Council on Functional Genomics and Translational Biology; and Council on Hypertension.
Co-Chair.

2016 Nov - 2017 Nov

Principal Investigator. Decision Making under Uncertainty in the Management of Acute Stroke with Endovascular Thrombectomy: Applying principles from Neuroeconomics (UNMASK EVT). University of Toronto, University of Calgary, Toronto, Canada. Collaborator(s): PIs **Gustavo Saposnik** Mayank Goyal

Advisors/Consultants
Michael D. Hill

Andrew M. Demchuk
Bijoy Menon.

The goal of the present proposal is to better understand how physicians caring for stroke patients make decisions by applying novel concepts and validated experiments from Behavioral economics/ Neuroeconomics.

2016 - 2017

Member of the ILCOR COSCA writing group. Member of the AHA writing group and COSCA on Cardiac Arrest. American Heart Association, United States. *Bernd Bottiger, Gavin Perkins, Gisela Iijja, Gustavo Saposnik; Kristin L. Haywood, Laura Whitehead, Laurie Morrison; Peter Morley, Vinay Nadkarni.*

2015 Jun - 2017 Nov

Principal Investigator. Decision Making under Uncertainty in the Management of Multiple Sclerosis. University of Toronto, Spanish Neurological society and Roche Pharma, Madrid, Spain. Collaborator(s): PIs: **Gustavo Saposnik**
Collaborators: Dr. Daniel Selchen, Dr. Jorge Maurino, Dr. Angel P. Sempere, Roula Raptis. *Objectives: to evaluate whether physicians' risk preferences are associated with TI in MS care, by applying concepts from behavioral economics.*

Design: In this cross-sectional study, participants answered questions regarding the management of 20 MS case-scenarios, completed 3 surveys and 4 experimental paradigms based on behavioral economics. Surveys and experiments included standardized measures

of aversion to risk and ambiguity, physicians' reactions to uncertainty, and questions related to risk preferences in different domains.

TI is a common phenomenon affecting nearly 7 out of 10 physicians caring for MS patients. Higher prevalence of TI was associated with physician's strong aversion to ambiguity and low tolerance of uncertainty.

2014 Feb - 2015

Member of the writing group. Member of the AHA writing group: Scientific Statement Scientific Rationale for the Inclusion and Exclusion Criteria for Intravenous Thrombolysis. American Heart Association, Toronto, Ontario, Canada. Collaborator(s): Bart Demaerschalk, Dawn O. Kleindorfer, Opeolu M. Adeoye, Andrew M. Demchuk, Jennifer E. Fugate, James C. Grotta, Alexander A. Khalessi.

As part of this writing group, I was in responsible for section on the benefits of thrombolysis for acute stroke by age groups and patients with pre-existing disability.

I completed a meta-analysis to show the risk of ICH post-tPA by age group.

This AHA Scientific Statement contain an up-to-date recommendations for the use of tPA.

2014 Feb - 2015

Co-Principal Investigator. Myndmove-Functional electric stimulation in patients with severe stroke. University of Toronto, MaRS Innovation (MaRS EXCITE program), Myndtec, Toronto Rehabilitation, PATH McMaster, Toronto, Ontario, Canada. Collaborator(s): Dr. Mark Bayley, Dr. Daria O'Reilly, James Bowen.

A three-arm, parallel group, multicentre, randomized controlled trial comparing electrical neuromodulation delivered by MyndMove® therapy to intensive rehabilitation therapy with a structured protocol or usual care, in the treatment of subacute stroke patients with moderate to severe upper extremity hemiparesis.

2014 Feb - 2015 Sep

Principal Investigator. Added benefits of stent retriever technology in Acute Stroke care: a pooled analysis. University of Toronto, University of Calgary, University of Texas, University of South Carolina, Toronto, Ontario, Canada. Collaborator(s): Lebovic G, Demchuk A, Levy EI, Ovbiagele B, Goyal M, Johnston SC.

We assessed the incremental effect of using stent retrievers compared with intravenous tissue plasminogen activator (IV tPA; alteplase) alone or placebo/control.

We conducted a pooled analysis of 4 studies using stent retrievers (Solitaire), IV tPA, or placebo/control. We applied the ischemic stroke risk score (www.sorcan.ca/iscore) to each participant to adjust for differences in baseline characteristics. We used a shift analysis to account for the potential benefits across the entire modified Rankin scale score at 90 days, adjusting for time-to-treatment, baseline Alberta Stroke Program Early CT score, and ischemic stroke risk score.

Of the 915 participants in this analysis, 312 (34.1%) patients received placebo, 312 (34.1%) received tPA alone, 131 (14.4%) received stent retrievers alone, and 160 (17.5) received combined therapy (IV tPA plus stent retrievers).

2014 Feb - 2015 May

Principal Investigator. Guideline-directed low-density lipoprotein management in high-risk patients with ischemic stroke: findings from Get with the Guidelines-Stroke 2003 to 2012.

University of Toronto, University of Calgary, Duke University, Get-with-the-Guidelines, American Heart Association, Toronto, Ontario, Canada. Collaborator(s): Fonarow GC, Pan W, Liang L, Hernandez AF, Schwamm LH, Smith EE; AHA Get-with-the-Guidelines Stroke. *We conducted an observational study, using data from the Get-With-The-Guidelines-Stroke Registry including 913 436 patients with an acute ischemic stroke or transient ischemic attack from April 2003 to September 2012. Overall, only 68% of patients with stroke were at their preadmission National Cholesterol Education Program III guideline-recommended LDL target; 51.3% had LDL <100 mg/dL; and only 19.8% had LDL <70 mg/dL. Among those presenting with a recurrent stroke, >45% had LDL >100 mg/dL.*

Conclusion: Management of dyslipidemia in high-risk patients with preexistent CAD or stroke continues to be suboptimal. Only 1 in 5 patients with prior TIA/stroke had LDL levels <70 mg/dL.

2013 Feb - 2015

Principal Investigator. iPad technology for home rehabilitation after stroke (iHOME): a proof-of-concept randomized trial. University of Toronto, University of Calgary, Toronto Rehabilitation, Heart and Stroke foundation Canadian Partnership for Stroke Rehabilitation, Toronto, Ontario, Canada. Collaborator(s): Chow CM, Gladstone D, Cheung D, Brawer E,

Thorpe KE, Saldanha A, Dang A, Bayley M, Schweizer TA; iHOME Research Team for the Stroke Outcomes Research Canada Working Group.
iHOME is an investigator-initiated randomized controlled pilot trial with a single-blinded outcome assessment. The intervention consists of iPad use (investigational group) vs. usual care (control group) among patients receiving conventional outpatient rehabilitation. Eligibility includes aged 18-85 years who experienced a mild ischemic or hemorrhagic stroke (as diagnosed on neuroimaging and determined by the Chedoke-McMaster score ≥ 3). The STROKE REHAB® software for the iPad was specifically designed for patients with fine motor weakness and/or neglect. Of the total 30 patients, 20 will be in iHOME Acute (enrolled within three-months of stroke onset) and 10 patients in iHOME Chronic (enrolled more than six-months from onset). We are currently finalizing recruitment.

2013 Feb - 2014 Aug

Principal Investigator. STROKE Journal research: what is bearing publish? Analysis of english proficiency and research investment. University of Toronto, University of Texas, University of South Carolina, Stroke Journal, American heart Association, Toronto, Ontario, Canada. Collaborator(s): Sposato LA, Ovbiagele B, Johnston SC, Fisher M; Stroke Outcome Research Working Group (www.sorcan.ca).
We completed an exhaustive of all manuscript submissions as original research to Stroke Journal from 2004 to 2012. We analyzed most common topics published, publication rate by country, and the influence of English proficiency and GDP/research investment on the acceptance rate per country.

2011 Dec - 2013

Principal Investigator. JURaSSiC: Accuracy of Clinician vs. Risk Score Prediction of Ischemic Stroke Outcomes. St. Michael's Hospital (SMH) and Toronto Rehabilitation (TRH), Toronto, Ontario, Canada. Collaborator(s): Robert Cote, MD FRCPC FAHA
Muhammad Mamdani, PharmD MPH MA
Stavroula Raptis, MSc
Kevin E. Thorpe, MMath
Jiming Fang, PhD
Donald A. Redelmeier, MD FRCPC
Larry B. Goldstein, MD, FAAN, FAHA.
The Clinician Judgment vs. Risk Score to predict Stroke outcomes (JURaSSiC) study randomized 111 Clinicians with expertise in acute stroke care to predict clinical outcomes of 5 assigned case-based ischemic stroke scenarios. Participants were enrolled in the study if they were practicing clinicians who provided stroke care in Ontario and were directly involved in medical decision making during the initial presentation or hospitalization. To reflect actual clinical practice, ischemic stroke cases for scenario development were selected to be representative of the 10 most common clinical presentations (n=1,415). This was possible by creating a patient profile matrix matched by age, sex, stroke severity, stroke subtype, the presence of vascular risk factors, glucose on admission, pre-admission status and risk stratum.

2010 - 2013

Principal Investigator. Effectiveness of Virtual Reality Technology using Wii gaming system in Stroke rehabilitation: a multicentre randomized clinical study. St. Michael's Hospital (SMH) and Toronto Rehabilitation (TRH), Toronto, Ontario, Canada. Collaborator(s): Dr. Leonard Cohen (National Institute of Health, USA- Director, Cortical Plasticity)
Dr. Kevin Thorpe (SMH)
Judith Hall (SMH)
Dr. Muhammad Mamdani (SMH)
Dr. Mark Bayley (TRH)
Dr. Pamela duncan (Duke University, USA)
Dr. Bob Teasell (University of Western Ontario)
Donna Cheung (SMH)
Jacqueline Willems (SMH).

2010 - 2013

External Consultant. Virtual Reality at Home in patients with Cardiac Heart Failure: a randomized clinical study. St. Michael's Hospital (SMH) and University of Linkoping (Sweden), Linkoping, Sweden. Collaborator(s): Dr. Leonie Klompstra
Dr. Tiny Jaarsma.

- 2010 - 2011 **Co-Principal Investigator.** Stroke outcomes according to the employment status. University of Buenos Aires, Toronto- Buenos Aires, Ontario, Canada. Collaborator(s): Dr. Luciano Sposato
Dr. Osvaldo Fustinoni.
- 2009 Jan **Adjunct Scientist.** Institute of Clinical Evaluative Sciences, Toronto, Ontario, Canada.
- 2009 - 2012 **Principal Investigator.** Stroke care in patients with and without dementia. St. Michael's Hospital and Institute Evaluative Clinical Sciences (ICES), Toronto, Ontario, Canada. Collaborator(s): Dr. Sandra Black
Dr. Robert Cote
Dr. Paula Rochon
Dr. Muhammad Mamdani
Dr. Moira K. Kapral.
- 2009 - 2012 **Principal Investigator.** Rehospitalization after stroke: a systematic review of the literature. St. Michael's Hospital, Toronto, Ontario, Canada. Collaborator(s): Dr. Sujatha Parthasarathy
Dr. Khalid Al-Hassan
Alison Chen.
- 2009 - 2011 **Principal Investigator.** Change in prescription patterns after PROFESS (Aspirin-DP vs Clopidogrel in stroke prevention). St. Michael's Hospital and Institute Evaluative Clinical Sciences (ICES), Toronto, Ontario, Canada. Collaborator(s): Wilson Kwong (student)
Dr. Daniel Selchen
Dr. Muhammad Mamdani (Co-PI).
- 2009 - 2011 **Principal Investigator.** Evaluating the risk of crashes in patients with stroke (E-CRASH). St. Michael's Hospital and Institute Evaluative Clinical Sciences (ICES), Toronto, Ontario, Canada. Collaborator(s): Dr. Donald Redelmeier (Co-PI)
Dr. Jon Ween
Members of the University of Toronto Stroke Program.
- 2009 - 2010 **Principal Investigator.** Myocardial Infarction associated with Recency of Immigration to Ontario (MARIO). St. Michael's Hospital and Institute Evaluative Clinical Sciences (ICES), Toronto, Ontario, Canada. Collaborator(s): Dr. Joel Ray
Dr. Esme Fuller-Thompson
Dr. Eva Lonn
Dr. Donald Redelmeier.
- 2008 Mar - 2010 Mar **Principal Investigator.** Effectiveness of Virtual Reality Technology using Wii gaming system in Stroke rehabilitation. St. Michael's Hospital (SMH) and Toronto Rehabilitation (TRH), Toronto, Ontario, Canada. Collaborator(s): Dr. Leonard Cohen (National Institute of Health, USA- Director, Cortical Plasticity)
Dr. Kevin Thorpe (SMH)
Judith Hall (SMH)
Dr. Muhammad Mamdani (SMH)
Dr. Mark Bayley (TRH)
Dr. Leonardo Cohen (NIH)
Alexis Dishaw (Toronto Grace Hospital)
Dr. Bob Teasell (University of Western Ontario)
Donna Cheung (SMH)
Jacqueline Willems (SMH).
- 2008 - 2010 **Principal Investigator.** Do all age groups benefit from organized stroke care? St Michael's Hospital, U of Toronto, U of Calgary, Toronto, Ontario, Canada. Collaborator(s): - University of Toronto, Toronto, ON (Dr. Moira Kapral)
- Institute of Clinical Evaluative Sciences (Jiming Fang)
- University of Calgary, Alberta (Drs Coutts S, Demchuk A, Hill MD).
- 2008 - 2010 **Principal Investigator.** Comparing quality of stroke care between the Argentinian and Canadian Stroke Registries. St Michael's Hospital, U of Toronto, U of Buenos Aires, Toronto- Buenos Aires, Ontario, Canada. Collaborator(s): - University of Toronto, Toronto (Dr. Moira Kapral)
- Institute of Clinical Evaluative Sciences, Toronto (Jiming Fang)

- 2008 - 2010 - University of Buenos Aires, Argentina (Drs. Sposato L, Fustinoni O).
Principal Investigator. Do all stroke subtypes benefit from organized stroke care/stroke unit admission? St Michael's Hospital, U of Toronto, U of Calgary, Toronto, Ontario, Canada. Collaborator(s): - University of Toronto, Toronto, ON (Dr. Moira Kapral, Dr. Daniel Selchen, Dr. Khalid Al-Hassan)
- Institute of Clinical Evaluative Sciences (Jiming Fang)
- University of Calgary, Alberta (Dr Eric Smith).
- 2007 - 2010 **Collaborator.** Development and Validation of a Simple Conversion Model for Comparison of the Canadian Neurological Scale (CNS) and the National Institute of Health Stroke Scale (NIHSS). University of Mahindol, Thailand, Bangkok, Thailand. Collaborator(s): - University of Toronto, ON (Dr. Ya Ping Li)
-University of Rome, Italy (Dr. Di legge S)
- University of Mahindol (Drs. Chulaluk Komoltri, Songkram Chotikanuchit, Niphon Pongvarin and Yongchai Nilanont)
- University of McGill, Montreal ON (Dr. Robert Cote)
- University of Western Ontario, ON (Dr Hachinski).
- 2007 - 2009 **Principal Investigator.** Income, hospital volume and stroke outcome. St. Michael's Hospital, Toronto, Ontario, Canada. Collaborator(s): - University of Toronto, Toronto, ON (Drs. Moira Kapral and Daniel Selchen)
- University of Western Ontario, London, ON (Dr Vladimir Hachinski)
- University of Alberta, Edmonton, ON (Dr Thomas Jeerakhatil).
- 2007 - 2009 **Senior Responsible Investigator.** Impact of seizures after stroke: Resources utilization and outcome. St. Michael's Hospital and Institute of Clinical Evaluative Sciences (ICES), Toronto, Ontario, Canada. Collaborator(s): - University of Western Ontario, London, ON (Dr. Jorge Burneo)
- Institute of Clinical Evaluative Sciences (ICES) (Jiming Fang).
- 2006 - 2008 **Principal Investigator.** The Weekend effect on stroke outcome. St Michael's Hospital, Toronto, Ontario, Canada. Collaborator(s): - University of Toronto, Toronto, ON (Dr. Neville Bayer)
- University of Western Ontario, London, ON (Dr. Vladimir Hachinski)
- McMaster University, Hamilton, ON (Dr Akerke Baibergenova).
- 2006 - 2008 **Principal Investigator.** Stroke Mortality: Does hospital volume matter? St. Michael's Hospital, University of Toronto, Toronto, Ontario, Canada. Collaborator(s): - University of Western Ontario, London, ON (Dr Vladimir Hachinski)
- McMaster University, Hamilton, ON (Dr Akerke Baibergenova)
- University of Calgary, Calgary, Alberta (Dr. Michael Hill)
- University of Toronto, ON (Moira K Kapral).

SYMPOSIUM

- 2016 Oct 7 **Chair and Organizer.** Chair and Organizer. Institute of Health Policy, Management and Evaluation, Toronto, Ontario, Canada.

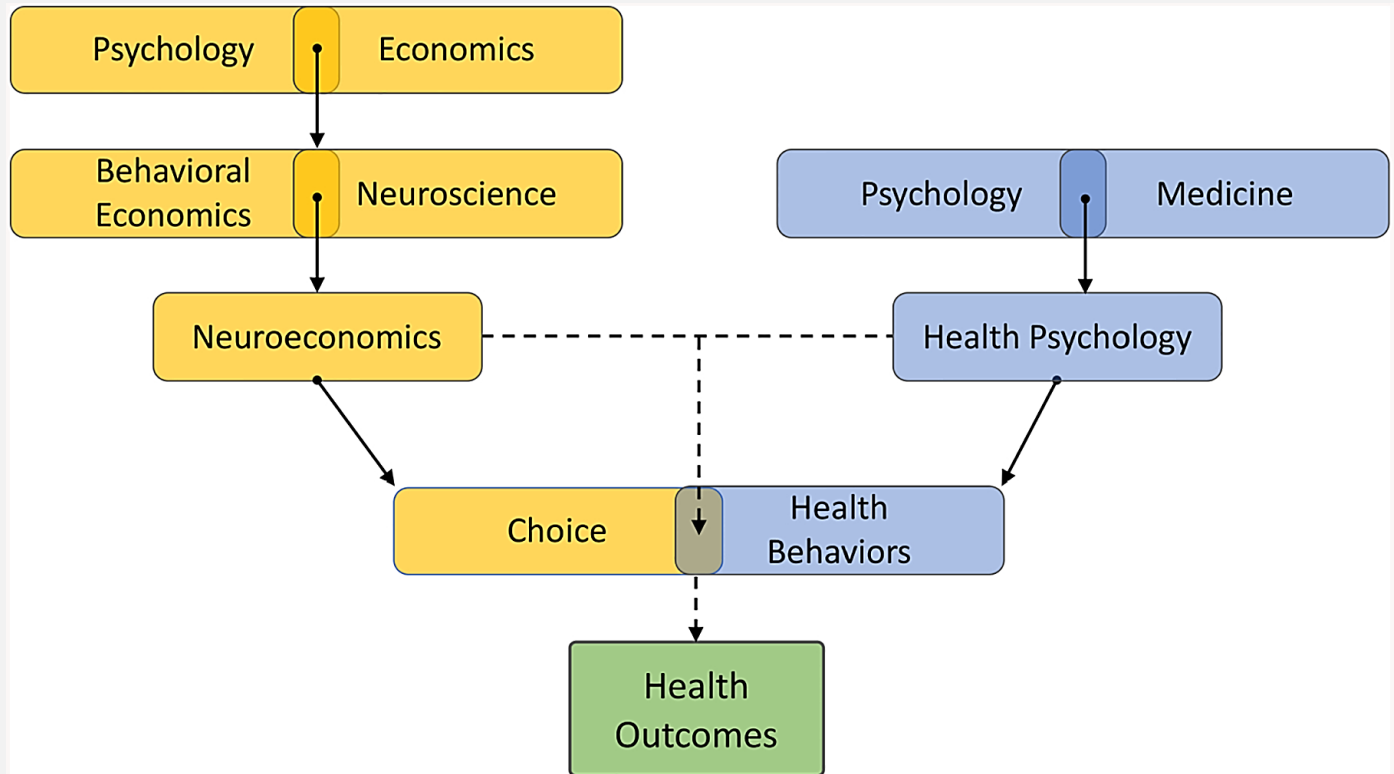
C. Academic Profile

1. RESEARCH STATEMENTS

Personal Statement.

Dr. Gustavo Saposnik is a scientist, neurologist, and Associate Professor of Medicine at the University of Toronto, Canada. He holds a Master's in Public Health; a joint program of Buenos Aires and Harvard Universities; and a PhD in Neuroeconomics from the University of Zurich. Gustavo has a global perspective with specific interest in cardiovascular

health, decision neuroscience, stroke care and medical education. His vision is improving clinical outcomes through cost-effective, high impact, and innovative strategies by applying concepts from Neuroeconomics. Decision Neuroscience, a branch of neuroeconomics, combines concepts from behavioral economics, cognitive science and psychology to study how we make decisions. Studies applying neuroeconomics made significant contributions by modifying human behavior, reducing the effects of cognitive biases influencing medical decisions, improving health outcomes (e.g. decreasing tobacco use and unhealthy eating, increasing the uptake of vaccinations) and optimizing health choices (see graph below).



Gustavo 's team developed different technologies of applications, tools, and educational interventions: **i) the iSCORE** (risk prognostic tool to estimate ischemic stroke outcomes and response to tPA), **ii) web-based stroke prognostic calculator** (www.sorcan.ca/iscore), **iii) The traffic light system educational intervention** to overcome therapeutic inertia, **iv) Development of visual aid tools as KT for patient education and physicians explanatory models of risk** (<https://bit.ly/3crd3Ws>). **v) Following his recent PhD in Decision Neuroscience (Neuroeconomics) at the University of Zurich, Gustavo gained experience and developed a web-based platform to conduct experiments and randomized studies in neuroeconomics**, including how and improve decisions by colleague physicians, allied health professionals and patients. Gustavo's strategy is applying concepts from behavioral economics/Neuroeconomics into health care. He realized that most clinicians do not have formal training in risk management and education in decision-making. Gustavo's recent thesis was about how physicians handle uncertainty based on the exemplary work on the Foundations of Therapeutic Inertia (<https://doi.org/10.5167/uzh-191338>). To accomplish these goals, **Gustavo funded and leads two large research teams:** **i) the Stroke Outcomes Research group**, a National & International multidisciplinary collaborative network of scientists (www.sorcan.ca) with interest in cerebrovascular diseases, and **ii) NeuroEconSolutions team:** Gustavo founded a multidisciplinary group with expertise in decision neuroscience (www.neuroeconsolutions.com). He is the CEO and CSO of NeuroeconSolutions. Gustavo's international leadership is reflected by grants (30 as PI), awards, over 280 peer-reviewed publications, keynote speaker, research collaborations and invitations as a Visiting Professor, and AHA roles (Stroke Oversight Committee and 7 AHA writing groups) (<https://bit.ly/3sxxecj>). He became the **new Editor-in-Chief** of the **World Stroke Academy** (<https://bit.ly/3bJPz02>) and Board of Directors of the World Stroke Organization. Gustavo's commitment and creativity in his new role was reflected in the [WSA newsletter](#). Gustavo's work has strong international impact as reflected by metrics (Google scholar h-index 66; >60,000 citations, see details below), recognition in the annual reviews on 'Advances in Stroke, Health Policy and Outcomes' published in the STROKE Journal (Rudd et al. Stroke 2009;40:e301-e304 - Williams et al. Stroke 2010;41:e77-e80 and Brainin et al. Stroke 2013;44:311-313) and LANCET (Lancet 2011; 377: May 14), as well as, multiple citations in high-impact journals (NEJM 2010, Nature Neurology 2016), and many publications captured by the media (see media report at <https://bit.ly/3xl23nd>).

Gustavo's contributions have had tangible impact in 7 areas:

- 1) Stroke prognostic tool (www.sorcan.ca/iscore) and visual aid tools (<https://bit.ly/3crd3Ws>). I lead a research team that created and validated an ischemic Stroke risk prognostic score called iScore, which helps clinicians to estimate death, disability, health costs, risk of bleeding & response to tPA after stroke. Validated in different ethnic groups & used worldwide.
- 2) Innovative technologies to enhance brain recovery: Pilot-tested creation of iPad application and implementation of virtual reality (Wii) showing improvement in motor recovery (<https://bit.ly/3qwogdV>). The results of EVREST multicenter (<https://bit.ly/3qwogdV>) altered Cochrane conclusions and recommendations (<https://bit.ly/3ilgQHm>).
- 3) SORCan (www.sorcan.ca): National and International Network in Stroke Outcomes Research: I funded & lead SORCan, contributing over 30 key articles on stroke outcomes (<https://bit.ly/396JsBg>).
- 4) Advances in Therapeutic Inertia and Decision-making in the management of neurological conditions (e.g. MS, stroke)
- 5) Advancing Stroke care: consultant for evaluation of process measures in Canada, Argentina, South Korea & Thailand.
- 6) Guidelines development: As a member of the AHA Stroke Oversight Committee, I had major roles in developing 5 different AHA guidelines for Stroke management. 1-5 Also working in 3 writing groups for AAN Guidelines, Rehab, and ILCOR for Cardiac Arrest (<https://bit.ly/3sxxecl>).
- 7) e-Tools: iSCORE application, iSCORE web, Stroke rehab tablet application (3), Development of Educational interventions: Traffic light system to overcome therapeutic inertia in MS and Stroke Care.

Medical Education of undergraduate (35) and graduate (10) students, residents (over 70), post-doctoral fellows (21) and visiting professors (5) to build research capacity. Many hired at prestigious universities worldwide.

- Development of educational interventions to optimize therapeutic decisions and ameliorate inertia in stroke and multiple sclerosis care.
- Development of educational workshops to optimize therapeutic decisions in the management of multiple sclerosis & stroke prevention.

IMPACT:

- Selected peer-reviewed publications: <https://goo.gl/vx94dM>

Peer reviewed publications: 284 **Metrics in Google scholar:** >60,000 citations,

h-index: 66, **i10 index:** 215, **Cites/paper:** 31.9, **Metrics in ResearchGate:** RG score 48.6.

- Gustavo's innovative work as recognized on annual updates in Stroke, Lancet, Nature Neurology, & NEJM
- Several projects garnered world-wide media attention (see **media report** at <https://bit.ly/3xl23nd>).
- Lead and co-lead global studies in stroke and MS care (e.g. UNMASK EVT, EVREST Multicenter trial, EDUCAR MS, DAMASCUS)
- The iSCORE (<https://bit.ly/3qLFWqJ>) is being used in multiple countries and recommended by scientific organizations (AHA, CSN).
- Introduction of new concepts influencing patient care: therapeutic inertia (<https://bit.ly/38RmeyU>), herding (, status quo, aversion to ambiguity (<https://bit.ly/3tPR8Qk>).
- Guidelines & Position statements: in Stroke rehabilitation, cardiac surgery in stroke patients with endocarditis, silent stroke, etc. Each AHA guideline influence colleagues worldwide on current and effective stroke care (<https://bit.ly/3sxxecl>).
- Gustavo's team approach on decision making under uncertainty and physicians factors associated with therapeutic inertia have been recognized and captured attention of scientists and pharmaceutical companies with ongoing projects in many countries.

2. PARTNERSHIPS & STRATEGIC ALLIANCES



- **The Health Innovation Hub (H2i):** foster new initiatives and educational activities
- **T-CAIREM:** supports studies using AI from research to education
- **Council of PWLE:** To ensure that our studies are relevant to patients, I created a council of people with lived experiences (PWLE). They will also inform about knowledge gaps and need for tools to improving physician’s communication.
- **Department of Economics, University of Zurich:** the group of scientists will support our studies in decision making
- **Canadian Stroke Consortium** (www.strokeconsortium.ca/home.php): facilitate National access to stroke clinicians and centers and facilitates KT activities.

- American Heart Association (AHA) and American Stroke Association (ASA):** I participate and chair AHA/ASA writing groups to be up-to-date regarding the current evidence and emerging therapies.
- HSF Canadian Partnership for Stroke recovery (www.canadianstroke.ca):** will provide access to stroke rehab centers
- **Stroke Outcomes Research Canada (www.sorcan.ca)** facilitates access to stroke clinics across the world.
- **The Hub (LKSKI):** The HUB (www.hubresearch.ca) provides world-class infrastructure to support clinical research design, statistical analysis, KT, economic analysis, and clinical research operations.
- **Canadian Association of Emergency Physicians (CAEP) (www.caep.ca)** facilitates National access to Emergency physicians for participating institutions of related projects in our program.
- **University of Toronto Stroke Program (torontostrokeprogram.com):** facilitates access and KT to stroke centers in Toronto & GTA.
- **HSF, the Ontario Stroke Network, Policymakers at OHA:** will help our innovative technologies are promptly disseminated (KT activities).
- **ICES (www.ices.on.ca):** As a senior scientist, I have access to administrative databases and stroke registry, which help build a network with policymakers and facilitate disseminations activities.
- **Toronto Rehabilitation Institute:** joint collaboration in patient care and research innovation (e.g. Myndmove device applying functional electrical stimulation for patients with severe weakness of the upper extremity, use of virtual reality in stroke rehabilitation).
- **MaRS Excite (www.marsdd.com)** provided support on the implementation of our technologies and facilitate interaction between researchers and industry (AI application decision making and stroke rehabilitation).
- **USquare Soft (www.usquaresoft.com/apps):** developed tablet applications, web tools, smart phone app as done with SORCan.
- **World Stroke Organization (www.world-stroke.org):** My roles as Editor-in-Chief of the WSA (World Stroke Academy), Board Member, and Executive member of the **Future Leaders** initiative ensure access to stroke centers at the international level, dissemination of results across the world, KT activities, and training the next generation of stroke scientists and leaders.

D. Research Funding

1. GRANTS, CONTRACTS AND CLINICAL TRIALS

PEER-REVIEWED GRANTS

FUNDED

- | | |
|---------------------|--|
| 2020 Jul - 2021 Dec | Co-Principal Investigator. Combating Anti-platelet Resistance Through Personalized Medicine. Innovation Funds Provincial. PI: Mohammad Quadura. 20,633 CAD. [Grants] |
| 2018 Jun - 2021 Dec | Principal Investigator. MEDICAL EDUCATION FOR BETTER OUTCOMES in MULTIPLE SCLEROSIS (EDUCAR MS). Collaborator(s): Montalban, Xavier Oh, Jiwon. 521,145 CAD. [Clinical Trials] |
| 2017 Jun - 2019 Jun | Principal Investigator. Decision making under uncertainty in Atrial fibrillation. Boheringer. 17,000 CAD. [Grants] |
| 2017 Jan - 2019 Jan | Principal Investigator. Decision making under uncertainty in Acute Stroke Care: the role of therapeutic inertia and risk preferences. Stryker USA. 272,000 CAD. [Grants]
<i>Mayank Goyal (Co-PI), Michael Hill and Andrew Demchuk.</i> |

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- 2015 Jun - 2017 Jun **Principal Investigator.** Decision making under uncertainty in Atrial fibrillation. Boheringer. 26,600 CAD. [Grants]
- 2014 Jun - 2017 Jun **Principal Investigator.** Efficacy of Virtual Reality Exercises using the Wii gaming technology in Stroke Rehabilitation (EVREST Multicenter). Heart and Stroke Foundation Canada (HSFC). Collaborator(s): Mark Bayley, Leonard Cohen, Robert Teasell, Muhammad Mamdani, Judith Hall, Kevin Thrope. 162,000 CAD. [Clinical Trials] *renewal.*
- 2014 Mar - 2018 Mar **Principal Investigator.** A three-arm, parallel group, multicentre, randomized controlled trial comparing electrical neuromodulation delivered by MyndMove® therapy to intensive rehabilitation therapy with a structured protocol or usual care, in the treatment of subacute stroke patients with moderate to severe upper extremity hemiparesis. MaRS Excite. Collaborator(s): Mark Bayley (Co-PI), Daria O'Reilly, James Bowen. 1,179,321 CAD. [Clinical Trials] *Administered by MaRS and McMaster (Operating center).*
- 2013 Jul - 2015 Jun **Co-Investigator.** Understanding Post-Stroke Driving Capacity: an fMRI Driving Simulator Study. Heart and Stroke Foundation of Canada (HSFC). PI: Schweizer, T.A. Collaborator(s): Graham, S., Naglie, G., **Saposnik, G.**, Macdonald, R.L., Hung, Y. 113,770 CAD. [Grants]
- 2013 Jun - 2016 Jun **Co-Investigator.** fMRI neurofeedback applied to motor imagery in stroke. Heart and Stroke Foundation of Canada (HSFC). PI: Graham, Simon. Collaborator(s): Black, S.E., Boe, S., **Saposnik, G.**, Staines, R., Schweizer, T.A. 278,214 CAD. [Grants]
- 2012 Jun - 2018 Jun **Principal Investigator.** iPad tablet technology for HOME Rehabilitation in patients after stroke. HSFC Center for Stroke Recovery. Collaborator(s): Co-PIs: Dr. Schweizer, Swartz Collaborators: Dr. Mark bayley, Dr. Chi-Ming Chow. 49,600 CAD. [Clinical Trials]
- 2012 Mar - 2014 Mar **Principal Investigator.** Effectiveness of iPad technology for HOME Rehabilitation after stroke (iHOME). Ontario Stroke Network, HSFO, and Ontario Ministry of Health. Collaborator(s): Mark Bayley, Leonardo Cohen, Robert Teasell, Jacqueline Willems, Muhammad Mamdani, Judith Hall, Kevin Thorpe. 74,623 CAD. [Clinical Trials]
- 2011 Mar - 2014 Mar **Principal Investigator.** Efficacy of Virtual Reality Exercises using the Wii gaming technology in Stroke Rehabilitation (EVREST Multicenter). Heart and Stroke Foundation Canada (HSFC). Collaborator(s): Mark Bayley, Leonard Cohen, Robert Teasell, Alexis Dishaw, Jacqueline Willems, Muhammad Mamdani, Judith Hall, Kevin Thrope, Mindy Levin, Pamela Duncan. 246,000 CAD. [Clinical Trials]
- 2010 - 2015 Jun **Principal Investigator.** Effectiveness of Virtual Reality Exercising using Wii gaming technology in Stroke Rehabilitation: a randomized multicentre study. Ontario Ministry of Health, Ontario Stroke Strategy (OSS), Heart and Stroke Foundation Ontario (HSFO). Collaborator(s): Drs Mark Bayley, William McIlroy, Jacqueline Willems, Donna Cheung, Robert Teasell, Muhammad Mamdani, Pamela Duncan (USA), Leonardo Cohen (NIH, USA). 85,900 CAD. [Grants]
- 2010 - 2012 **Co-Investigator.** The 'Weight Times' Strategy: A Simple, Low Cost Intervention to Improve Safety in Patients Receiving Thrombolysis for Acute Stroke. Ontario Ministry of Health, Ontario Stroke Strategy (OSS), Heart and Stroke Foundation Ontario (HSFO). PI: Dr. Richard Swartz. Collaborator(s): Drs David Gladstone, **Gustavo Saposnik**, Frank Silver. 85,900 CAD. [Grants]
- 2010 - 2012 **Co-Investigator.** The Ontario Atrial Fibrillation Stroke Prevention Registry. Ontario Ministry of Health, Ontario Stroke Strategy (OSS), Heart and Stroke Foundation Ontario (HSFO). PI:

Dr. David Gladstone. Collaborator(s): Drs Richard Swartz, **Gustavo Saposnik**, Frank Silver and the UTSP investigators. 85,900 CAD. [Grants]

- 2009 Nov - 2011 Nov **Co-Principal Investigator.** Premature Risk of Stroke across Canada (CFSSI): The role of Fabry disease. Canadian Stroke Consortium (CSC). PI: Drs Saposnik, Lanthier, Selchen. Collaborator(s): Drs. Muhammad Mamdani, David Moore (Senior Investigator). 853,928.5 CAD. [Grants]
Co-Principal author, responsible for drafting the proposal, REB submission, planning the analysis, interpretation of the results, overall contribution: ~50%.
- 2009 Nov - 2011 Mar **Principal Investigator.** S.O.S Stroke Care: evaluating the gaps along the continuum. Heart Stroke Foundation Ontario (HSFO). Collaborator(s): Drs Chaim Bell (Co-PI), Moira K. Kapral, Paula Rochon, Susan Bronskill, Geoffrey Andersson. 86,600 CAD. [Grants]
Principal author, responsible for drafting the proposal, REB submission, planning the analysis, interpretation of the results, overall contribution: ~60%.
- 2009 Nov - 2011 Mar **Senior Investigator and Mentor.** Effect of an Inpatient Code Stroke Protocol on the timeliness in the identification, assessment and treatment of inpatient acute strokes. Heart Stroke Foundation Ontario (HSFO). PI: Krystyna Skrabka and Jacqueline Willems. Collaborator(s): Drs Muhammad Mamdani, Sharon Strauss, **Gustavo Saposnik**. 35,500 CAD. [Grants]
- 2008 Nov - 2010 Mar **Principal Investigator.** EVREST - Effectiveness of Virtual Reality Exercises in Stroke Rehabilitation. Ontario Stroke Strategy (OSS) and Heart Stroke Foundation Canada. Collaborator(s): Mark Bayley, Leonard Cohen, Robert Teasell, Alexis Dishaw, Jacqueline Willems, Muhammad Mamdani, Judith Hall, Kevin Thrope. 60,000. [Clinical Trials]
Principal author, responsible for drafting the proposal, REB and proposal submission, planning the analysis, interpretation of the results, overall contribution: ~70%.
- 2008 Jul - 2011 Jun **Principal Investigator.** "Premature risk of stroke in recent immigrants (PRESARIO). HSFO (Personnal support). Clinician Scientist Award. Collaborator(s): Ray, Redelmeier, Lindsay, Fuller-Thompson. 192,000. [Grants]
Principal author, responsible for drafting the proposal, REB submission, planning the analysis, interpretation of the results, writing the manuscript, overall contribution: ~70%.
- 2008 Jul - 2010 Jun **Principal Investigator.** Indicators of Quality of Care and Stroke Outcome. Heart Stroke Foundation Ontario (HSFO). Collaborator(s): Drs Muhammad Mamdani, Moira K. Kapral, Peter Austin, Ruth Hall, Jack Tu. 49,860. [Grants]
Principal author, responsible for drafting the proposal, REB submission, planning the analysis, interpretation of the results, overall contribution: ~60%.
- 2007 Nov - 2009 Jun **Principal Investigator.** "Premature risk of stroke in recent immigrants (PRESARIO). HSFO (Operating grant). Collaborator(s): Ray, Lidsay, Fuller-Thompson, Redelmeier. 51,040. [Grants]
Principal author, responsible for drafting the proposal, REB and proposal submission, planning the analysis, interpretation of the results, overall contribution: ~70%.
- 2007 Jul - 2009 Jul **Collaborating Investigator.** CREST (Carotid endarterectomy vs. Stenting for carotid stenosis). NIH funded. PI: Montanera. 56,570. [Grants]
- 2007 Jul - 2009 Jun **Principal Investigator.** "Health system determinants of Stroke Outcome". Connaught Foundation (Ontario). 12,500. [Grants]
Principal author, responsible for drafting the proposal, REB submission, planning the analysis, interpretation of the results, writing the manuscript, overall contribution: ~70%.

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- 2007 Jun - 2010 May **Co-Investigator.** "INTERSTROKE" the impact of lifestyle, risk factors and genes on stroke outcome. CIHR. PI: O'Donnell. Collaborator(s): Saposnik, Gladstone, Kapral, Yusuf. 345,000. [Grants]
Co-applicant, collaborator, reviewing the proposal, planning the analysis, interpretation of the results, overall contribution: ~20%.
- 2007 Feb - 2010 May **Principal Site Investigator.** ALIAS – Albumin for Acute Stroke. Baxter. PI: Dr. Myron Gingsberg and Micahel Hill. 150,000. [Grants]
- 2006 Jul - 2010 Mar **Co-Investigator.** Assessing the impact of Secondary Prevention Clinics (SPCs) in the Province of Ontario". Canadian Institutes of Health Research (CIHR). PI: Hachinski. 93,500 CAD. [Grants]
Co-Principal author, responsible for drafting the proposal, planning the analysis with special focus on the outcome measures, interpretation of the results, overall contribution: ~50%.
- 2006 Jul - 2008 Mar **Co-Investigator.** Assessing the impact of Secondary Prevention Clinics (SPCs) in the Province of Ontario". Ontario Ministry of Health and Long-Term Care. PI: Hachinski. 93,500 CAD. [Grants]
Co-Principal author, responsible for drafting the proposal, planning the analysis with special focus on the outcome measures, interpretation of the results, overall contribution: ~50%.
- 2004 Jul - 2007 Jun **Principal Applicant.** Focus in Stroke Fellowship Award- "Preserving cognition by improving vascular risk factors control: a randomized controlled trial". Canadian Institute for Health Research (CIHR) and Heart Stroke Foundation Canada (HSFC). Gustavo Saposnik. PI: **Gustavo Saposnik.** 165,000. [Research Fellowships]
Principal author, responsible for drafting the proposal, gathering data, conducting the analysis, writing the manuscript, overall contribution: ~80%.

NON-PEER-REVIEWED GRANTS

FUNDED

- 2021 Jan - 2023 Jul **Principal Applicant.** Decision making in Early MS care in Spain. Hoffman Laroche (Spain). PI: Dr **Gustavo Saposnik.** 29,500 EUR. [Grants]
- 2020 Nov - 2023 Nov **Principal Applicant.** Decision making in Spinal Muscular Athrophy. Hoffman Laroche (Spain). PI: Dr **Gustavo Saposnik.** 55,000 EUR. [Grants]
- 2020 Sep - 2023 Jul **Principal Applicant.** Comparison of Decision making between MS and non-MS pharmacists in Spain (ATTRIBUTE MS). Hoffman Laroche (Spain). PI: Dr **Gustavo Saposnik.** 30,000 EUR. [Grants]
- 2018 Sep - 2021 Jul **Principal Investigator.** Therapeutic Inertia in MS care across Canada: applying concepts from Neuroeconomics. Roche Pharma (Canada). Collaborator(s): Dr. Jiwon Oh (Co-PI). 87,000 CAD. [Grants]
- 2018 Jun - 2021 Jul **Principal Investigator.** Emotional expressions associated with Therapeutic Inertia in MS care. Roche Pharma (Canada). Collaborator(s): Dr. Jiwon Oh (Co-PI). 47,000 CAD. [Grants]
- 2016 Jul - 2018 Jun **Principal Investigator.** Overcoming Therapeutic inertia in MS Care across Canada. Roche Canada. 178,000 CAD. [Clinical Trials]
Principal author, responsible for drafting the proposal, REB and proposal submission, planning the analysis, interpretation of the results, overall contribution: ~70%.

Gustavo SAPOSNIK

- 2008 Apr - 2010 Mar **Principal Investigator.** EVREST - Effectiveness of Virtual Reality Exercises in Stroke Rehabilitation. SE Toronto Regional Stroke Strategy. Collaborator(s): Mark Bayley, Leonard Cohen, Robert Teasell, Alexis Dishaw, Jacqueline Willems, Muhammad Mamdani, Judith Hall, Kevin Thrope. 20,000. [Clinical Trials]
Principal author, responsible for drafting the proposal, REB and proposal submission, planning the analysis, interpretation of the results, overall contribution: ~70%.
- 2006 Jul - 2011 Jun **Principal Investigator.** Health System determinants of Stroke Outcome. Division of Neurology, Department of Medicine and Research Department at St. Michael's Hospital. 150,000 CAD. [Grants]
Principal author, responsible for drafting the proposal, REB and proposal submission, planning the analysis, interpretation of the results, overall contribution: ~70%.
- 2003 Nov - 2008 Mar **Collaborating Investigator.** PROFESS- Aspirin, Clopidogrel and Micardis in secondary stroke prevention. Boehringer. PI: Hachinski. 261,000. [Grants]
- 2002 Nov - 2005 Mar **Collaborating Investigator.** CHARISMA - Clopidogrel and aspirin in secondary stroke prevention. Covance. PI: Hachinski. 88,000. [Grants]
- 2002 May - 2005 Mar **Collaborating Investigator.** ONO-2506 - Neuroprotector in Acute Stroke. Omnicare-NIH. PI: Hachinski. 151,000. [Grants]
- 2002 Apr - 2006 Nov **Collaborating Investigator.** FASTER - Early assessment after a TIA or minor stroke (Aspirin, clopidogrel and simvastatin). CIHR, CSC. PI: Hachinski. 73,000. [Grants]
- 2000 Jan - 2005 Apr **Collaborating Investigator.** AbesTT – Abciximab in acute stroke. Eli Lilly. PI: Hachinski. 131,000. [Grants]
- 2000 Jan - 2005 Jan **Collaborating Investigator.** RECT - Repinotan in acute stroke. Bayer. PI: Hachinski. 141,000. [Grants]
- 1999 Apr - 2002 Dec **Collaborating Investigator.** BMS-204352 - Neuroprotector in acute stroke. Bristol-Meyers. PI: Rey RC. 120,000. [Grants]
- 1998 Apr - 2002 Dec **Collaborating Investigator.** TAPPIRS - Triflusal and aspirin in secondary stroke prevention. Uriach, Spain. PI: Rey RC. 120,000. [Grants]
- 1998 Apr - 2002 Dec **Collaborating Investigator.** International Stroke Trial (IST)- Aspirine versus Heparine for secondary prevention in Acute Stroke. Medical Council. PI: Rey RC. 100,000. [Grants]

2. SALARY SUPPORT AND OTHER FUNDING

Personal Salary Support

- 2017 Jul - 2021 Jun HSFC Career Investigator Award. Heart Stroke Foundation of Canada (HSFC). 320,000 CAD. Ontario, Canada. (Specialty: Stroke).
- 2017 Jul - 2020 Jun Clinician Scientist Merit Award. University of Toronto. Canada. (Specialty: Medicine). 120,000 CAD. Toronto, Ontario, Declined for being the recipient of the HSFC Career Award
- 2012 Jul - 2017 Jun New Investigator Award. Canadian Institute for Health Research (CIHR).

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300,000 CAD. Ontario, Canada. (Specialty: Stroke). Declined for accepting the HSF Award

- 2012 Jul - 2017 Jun HSFC Distinguished Clinician Scientist Award. Heart Stroke Foundation of Canada (HSFC). 500,000 CAD. Ontario, Canada. (Specialty: Stroke).
- 2012 Jul - 2013 Jun MacDonald Award. Heart Stroke Foundation of Canada (HSFC). 15,000 CAD. Ontario, Canada. (Specialty: Stroke).
- 2008 Jun - 2011 Jun HSFO Clinician Scientist Award. Heart Stroke Foundation Ontario (HSFO). 192,000 CAD. Ontario, Canada. (Specialty: Stroke).
- 2004 Jun - 2007 Jun HSFO Focus in Stroke Fellowship Award. Heart Stroke Foundation Ontario (HSFO). 180,000 CAD. Ontario, Canada. (Specialty: Stroke).

E. Publications

1. MOST SIGNIFICANT PUBLICATIONS

1. Nogueira RG, Qureshi MM, Abdalkader M, Martins SO, Yamagami H, Qiu Z, Mansour OY, Sathya A, Czlonkowska A, Tsvigoulis G, Aguiar de Sousa D, Demeestere J, Mikulik R, Vanacker P, Siegler JE, Kórv J, Biller J, Liang CW, Sangha NS, Zha AM, Czap AL, Holmstedt CA, Turan TN, Ntaios G, Malhotra K, Tayal A, Loochtan A, Ranta A, Mistry EA, Alexandrov AW, Huang DY, Yaghi S, Raz E, Sheth SA, Mohammaden MH, Frankel M, Bila Lamou EG, Aref HM, Elbassiouny A, Hassan F, Menecie T, Mustafa W, Shokri HM, Roushdy T, Sarfo FS, Alabi TO, Arabambi B, Nwazor EO, Sunmonu TA, Wahab K, Yaria J, Mohammed HH, Adebayo PB, Riahi AD, Ben Sassi S, Gwaunza L, Ngwende GW, Sahakyan D, Rahman A, Ai Z, Bai F, Duan Z, Hao Y, Huang W, Li G, Li W, Liu G, Luo J, Shang X, Sui Y, Tian L, Wen H, Wu B, Yan Y, Yuan Z, Zhang H, Zhang J, Zhao W, Zi W, Leung TW, Chugh C, Huded V, Menon B, Pandian JD, Sylaja PN, Usman FS Sr, Farhoudi M, Hokmabadi ES, Horev A, Reznik A, Hoffmann RS, Ohara N, Sakai N, Watanabe D, Yamamoto R, Doijiri R. Global Impact of COVID-19 on Stroke Care and Intravenous Thrombolysis. *Neurology*. 2021 Mar 25;3(12):e2022227. **Coauthor or Collaborator**.
2. **Saposnik G**, Grueschow M, Oh J, Terzaghi MA, Kostyrko P, Vaidyanathan S, Nisenbaum R, Ruff CC, Tobler PN. Effect of an Educational Intervention on Therapeutic Inertia in Neurologists With Expertise in Multiple Sclerosis: A Randomized Clinical Trial. *JAMA Netw Open*. 2020 Dec 16;3(12):e2022227. **Principal Author**.
3. Markus HS, **Saposnik G**. Improving stroke care through education: The World Stroke Academy. *Int J Stroke*. 2020 Oct 1;15(7):703. **Senior Responsible Author**.
4. Meca-Lallana J, Hernandez-Perez MA, Sempere AP, Brieva L, Garcia-Arcelay E, Terzaghi M, **Saposnik G**, Ballesteros J Meca-Lallan J, et al. Psychometric Properties of the SymptoMScreen Questionnaire in a mild Disability Population of Patients with Relapsing- Remitting Multiple Sclerosis: Quantifying of the Patient's Perspective. *Neurol Ther*. 2020 Jun 9;9(1):173-179. **Coauthor or Collaborator**.
5. Ospel JM, Kim B, Heo JH, Yoshimura S, Kashani N, Menon B, Almekhlafi M, Demchuk A, Hill M, **Saposnik G**, Goyal M. Endovascular treatment decision-making in acute ischemic stroke patients with large vessel occlusion and low National Institutes of Health Stroke Scale: insights from UNMASK EVT, an international multidisciplinary survey. *Neuroradiology*. 2020 Jun 1;62(6):715-721. **Senior Responsible Author**.
6. Gao MM, Wang J, **Saposnik G**. The Art and Science of Stroke Outcome Prognostication. *STROKE AHA*. 2020 May 20:1358-1360 doi. **Senior Responsible Author**.
7. Joundi, RA, **Saposnik G**, Martino, R, Fang J, Kapral MK. Development and Validation of a Prognostic Tool for Direct Enteral Tube Insertion after Acute Stroke. *STROKE*. 2020 May 13:1720-1726 doi. **Co-Principal Author**.

8. Sposato LA, Lam M, Allen B, Richard L Sharriff SZ, **Saposnik, G**. First-ever ischemic stroke and increased risk of incident heart disease in older adults. *NEUROLOGY*. 2020 Apr 14:11559-e1570. **Senior Responsible Author**.
9. Ospel JM, Kashani N N , Menon B, Almekhlafi M, Wilson A, Fischer U, Campbell B, Yoshimura S, Turjman F, Cherian M, Heo JH, Hill M, **Saposnik G**, Goyal M, Ospel JM et al. Endovascular Treatment Decision Making in Octogenarians and Nonagenarians: Insights from UNMASK EVT an International Multidisciplinary Study. *Clin Neuroradiol*. 2020 Mar 30(1):45-50. **Coauthor or Collaborator**.
10. Lee KJ, Kim JY, Kang J, Kim BJ, Kim SE, Oh H, Park HK, Cho YJ, Park JM, Park KY, Lee KB, Lee SJ, Park TH, Lee SJ Park TH, Lee JS, Lee J, Yang KH, Choi AR, Kang MY, Saposnik, G Bae HJ, Lee KJ. Hospital Volume and Mortality in Acute Ischemic Stroke Patients: Effect of Adjustment for Stroke Severity. *J Stroke Cerebrovasc Dis*. 2020 Mar 7:10.10.16. **Coauthor or Collaborator**.
11. Ospel JM, Kashani N, Wilson AT, Fischer U, Campbell BCV, Sylaja PN, Yoshimura S, Rabinstein AA, Turjman F, Mitchell P, Kim BM, Cherian MP, Heo JH, Baxter BW, Podlasek A, Foss M, Menon BK, Almekhlafi MA, Demchuk AM, Hill MD, **Saposnik G**, Goyal M. Endovascular treatment decision in acute stroke: does physician gender matter? Insights from UNMASK EVT, an international, multidisciplinary survey. *J Neurointerv Surg*. 2020 Mar 1;12(3):256-259. **Co-Principal Author**.
12. Ospel JM, Kashani N, Turjman F, Fischer U, Baxter B, Rabinstein A, Coutts S, Menon BK, Almekhlafi M, Hill MD, **Saposnik G**, Boyal M, Ospel JM et al. Discrepancies between current and ideal endovascular stroke treatment practice in Europe and North America: Results from UNMASK EVT, a multidisciplinary survey. *Interv Neuroradiol*. 2020 Feb 20:10.177. **Coauthor or Collaborator**.
13. Silver B, Hamid T, Khan M, Di Napoli M, Behrouz R, **Saposnik G**, Sarafin JA, Martin S, Moonis M, Henninger N, Goddeau R, Jun-O'Connell A, Cutting SM, Saad A, Yaghi S, Hall W, Muehlschlegel S, Carandang R, Osgood M, Thompson BB, Fehnel CR, Wendell LC, Potter NS, Gilchrist JM, Barton B , Silver B et al. 12 versus 24 h bed rest after acute ischemic stroke thrombolysis; a preliminary experience. *J Neurol Sci*. 2020 Feb 15. **Coauthor or Collaborator**.
14. Ospel JM, Kashani N, Goyal M, Menon Bk, Campbell BCV, Fischer U, Turjman F, Mitchell P, Yoshimura S, Podlasek AM, Rabinstein AA, Wilson AT, Kim BM, Baxter BW, Cherian MP, Heo JH< Foss M, Demchuk AM, Sylaja PN, Hill MD, **Saposnik G**, Almekhlafi MA, Ospel JM et al. Time of day and endovascular treatment decision in acute stroke with relative endovascular treatment indication; insights from UNMASK EVT international survey. *J Neurointerv Surg*. 2020 Feb;12(2):122-126. **Coauthor or Collaborator**.
15. Sposato LA, Lam M, Allen B, Shariff SZ, **Saposnik G**. PARADISE Study Group, Sposato LA et al. First Ever Ischemic Stroke and Incident Major Adverse Cardiovascular Events in 93 627 Older Women and Men. *STROKE AHA*. 2020 Feb;2:387-394. **Senior Responsible Author**.
16. Terzaghi MA, Ruiz C, Martinez Lopez I, Perez-Encinas M, Bakdache F, Maurino J, **Saposnik G**, Terzaghi MA et al. Factors Associated with therapeutic inertia among pharmacists caring for people with Multiple Sclerosis. *Mult Scler Relat Disord*. 2019 Dec 9. **Coauthor or Collaborator**.
17. Kashani N, Ospel JM, Menon BK, **Saposnik G**, Almekhlafi M, Sylaja PN, Campbell BCV, Heo JH, Mitchell PJ, Cherian M, Turjman F, Kim B, Fischer U, Wilson AT, Baxter R, Rabinstein A, Yoshimura S, Hill MD, Goyal M, Kashani N, et al. Influence of Guidelines in Endovascular Therapy Decision Making in Acute Ischemic Stroke: Insights from UNMASK EVT. *Stroke AHA*. 2019 Dec;50(12):3578-3584. **Coauthor or Collaborator**.
18. Joundi RA, **Saposnik G**, Martino R, Fang J, Kapral MK, Joundi RA et al. Timing of Direct Enteral Tube Placement and Outcomes after Acute Stroke. *J Stroke Cerebrovasc Dis*. 2019 Dec;12. **Co-Principal Author**.
19. Krawczyk M, Fridman S, Cheng Y, Fang J, **Saposnik G**, Sposato L. Atrial fibrillation diagnosed after stroke and dementia risk: cohort study of first-ever ischaemic stroke patients aged 65 or older. *Europace*. 2019 Sep 18. **Coauthor or Collaborator**.

20. **Saposnik G**, Menon BK, Kashani N, Wilson AT, Yoshimura S, Campbell BCV, Baxter B, Rabinstein A, Turjman F, Fischer U, Ospel JM, Mitchell PJ, Sylaja PN, Cherian M, Kim B, Heo JH, Podlasek A, Almekhlafi M, Foss MM, Demchuk AM, Hill MD, Goyal M. Factors Associated With the Decision-Making on Endovascular Thrombectomy for the Management of Acute Ischemic Stroke. *Stroke*. 2019 Sep;50(9):2441-2447. **Principal Author**.

Background and Purpose- Little is known about the real-life factors that clinicians use in selection of patients that would receive endovascular treatment (EVT) in the real world. We sought to determine patient, practitioner, and health system factors associated with therapeutic decisions around endovascular treatment. Methods- We conducted a multinational cross-sectional web-based study comprising of 607 clinicians and interventionalists from 38 countries who are directly involved in acute stroke care. Participants were randomly allocated to 10 from a pool of 22 acute stroke case scenarios. Each case was classified as either Class I, Class II, or unknown evidence according to the current guidelines. We used logistic regression analysis applying weight of evidence approach. Main outcome measures were multilevel factors associated with EVT, adherence to current EVT guidelines, and practice gaps between current and ideal practice settings. Results- Of the 1330 invited participants, 607 (45.6%) participants completed the study (53.7% neurologists, 28.5% neurointerventional radiologists, 17.8% other clinicians). The weighed evidence approach revealed that National Institutes of Health Stroke Scale (34.9%), level of evidence (30.2%), ASPECTS (Alberta Stroke Program Early CT Score) or ischemic core volume (22.4%), patient's age (21.6%), and clinicians' experience in EVT use (19.3%) are the most important factors for EVT decision. Of 2208 responses that met Class I evidence for EVT, 1917 (86.8%) were in favor of EVT. In case scenarios with no available guidelines, 1070 of 1380 (77.5%) responses favored EVT. Comparison between current and ideal practice settings revealed a small practice gap (941 of 6070 responses, 15.5%). Conclusions- In this large multinational survey, stroke severity, guideline-based level of evidence, baseline brain imaging, patients' age and physicians' experience were the most relevant factors for EVT decision-making. The high agreement between responses and Class I guideline recommendations and high EVT use even when guidelines were not available reflect the real-world acceptance of EVT as standard of care in patients with disabling acute ischemic stroke.

21. Burneo JG, Antaya TC, Allen BN, Belisle A, Shariff SZ, **Saposnik G**, Burneo JG et al. The risk of new-onset epilepsy and refractory epilepsy in older adult stroke survivors. *Neurology*. 2019 Aug 6;93(6):e568-e77. **Coauthor or Collaborator**.
22. Dijkland SA, Jaja B NR, Van der Jagt M, Roozenbeek B, Vergouwen MDI, Suarez JI, Torner JC, Todd MM, Van den Bergh WM, **Saposnik G**, Zumofen SW, Cusimano MD, Mayer SA, Lo BWY, Steyerberg EW, Dippel DWJ, Schweizer TA, Macondald RL, Lingsma HF, Members of the SAHIT Collaboration Dijkland SA et al. Between- center and between country differences in outcome after aneurysmal subarachnoid hemorrhage in the Subarachnoid Hemorrhage International Trialists (SAHIT) repository. *J Neurosurg*. 2019 Aug;1(0). **Coauthor or Collaborator**.
23. Almusalam N, Oh J, Terzaghi M, Maurino J, Backdache F, Montoya A, Caceres F, **Saposnik G**, Almusalam N, et al. Comparison of Physician Therapeutic Inertia for Management of Patients with Multiple Sclerosis in Canada, Argentina, Chile and Spain. *JAMA Netw Open*. 2019 Jul 3;2(7). **Coauthor or Collaborator**.
24. **Saposnik G**, Oh X, Bakdache F, Montoya A, Terzaghi M, Ruff C, Tobler PN. Emotional expressions associated with therapeutic inertia in MS Care. *MSARD*. 2019 Jun 25. **Principal Author**.

25. **Saposnik G**, Mamdani M, Montalban X, Tobler PN, Caceres F. Traffic light system reduces therapeutic inertia in multiple sclerosis care: a randomized study. *Medical Decision Making*. 2019 Jun 23. **Principal Author**.
- Therapeutic inertia (TI) is a common phenomenon among physicians who care for patients with chronic conditions. We evaluated the efficacy of the traffic light system (TLS) educational intervention to reduce TI among neurologists with MS expertise. Methods: In this randomised, controlled trial, 90 neurologists who provide care to MS patients were randomly assigned to the TLS intervention (n = 45) or to the control group (n = 45). The educational intervention employed the TLS, a behavioral strategy that facilitates therapeutic choices by facilitating reflective decisions. The TLS consisted in a short, structured, single session intervention of 5-7 min duration. Participants made therapeutic choices of 10 simulated case-scenarios. The primary outcome was a reduction in TI based on a published TI score (case-scenarios in which a participant showed TI divided by the total number of scenarios where TI was possible ranging from 0 to 8). Results: All participants completed the study and were included in the primary analysis. TI was lower in the TLS group (1.47, 95% CI 1.32-1.61) compared to controls (1.93; 95% CI 1.79-2.08). The TLS group had a lower prevalence of TI compared to controls (0.67, 95% CI 0.62-0.71 vs. 0.82, 95% CI 0.78-0.86; p = 0.001). The multivariate analysis, adjusted for age, specialty, years of practice, and risk preference showed a 70% reduction in TI for the TLS intervention compared to controls (OR 0.30; 95% CI 0.10-0.89). Conclusions: In this randomized trial, the TLS strategy decreases the incidence of TI in MS care irrespective of age, expertise, years for training, and risk preference of participants, which would lead to better patient outcomes.*
26. **Saposnik G**, Mamdani M, Montalban X, Terzaghi M, Silva B, Saladino ML, Tobler PN, Caceres F, Saposnik G et al. Traffic lights Intervention Reduces Therapeutic Inertia: A Randomized Controlled Trial in Multiple Sclerosis Care. *MDM Policy Pract*. 2019 Jun;21(4). **Senior Responsible Author**.
27. **Gustavo Saposnik**, MD; Leonardo G. Cohen, MD2; Muhammad Mamdani, PharmD MPH3; Sepideth Pooyania, MD4; Michelle Ploughman, PT PhD5; Donna Cheung, OT6; Jennifer Shaw, RhT7; Judith Hall, MSc3; Peter Nord, MD8; Sean Dukelow, MD PhD9; Yongchai Nilanont, MD10; Felipe De los Rios, MD11; Lisandro Olmos, MD12; Mindy Levin, PhD13; Robert Teasell, MD14; Ashley Cohen, MSc3; Kevin Thorpe, MMath3; Andreas Laupacis, MD3; Mark Bayley, MD7 for the Stroke Outcomes Research Canada (SORCan-www.sorcan.ca). Efficacy of non-immersive Virtual Reality Exercising in STroke Rehabilitation (EVREST): A Randomized, single-blind, controlled Trial. *Lancet Neurology*. 2016 May 27. **Principal Author**.
28. **Saposnik G**, Johnston SC. Decision making in Acute Stroke Care: Learning for Neuroeconomics, Neuromarketing and Poker players. *STROKE*. 2014 Jun 8;9. **Principal Author**.
29. Ovbiagele B, Reeves MJ, Nasiri M, Johnston SC, Bath PM, **Saposnik G**; for the VISTA-Acute Collaboration Steering Committee. A Simple Risk Index and Thrombolytic Treatment Response in Acute Ischemic Stroke. *JAMA Neurology*. 2014 May. 2014 May 5. Impact Factor 8.7. **Senior Responsible Author**.
30. Bushnell, C, **Saposnik, G**. Evaluation and Management of cerebral venous thrombosis. *Continuum*. 2014 Apr 20. 2014 Apr;20(2 Cerebrovascular Disease):335-51. **Principal Author**.
31. Bart M. Demaerschalk, MD, MSc, FRCPC, Chair; Dawn O. Kleindorfer, MD, FAHA, Co-Chair; Opeolu M. Adeoye, MD, MS; Andrew M. Demchuk, MD, FRCPC; Jennifer E. Fugate, DO; James C. Grotta, MD; Alexander A. Khalessi, MD, MS; Elad I. Levy, MD, FACS, FAHA, FAANS; Judith H. Lichtman, PhD, MPH, FAHA; Yuko Y. Palesch, MD; Shyam Prabhakaran, MD, MS, FAHA; **Gustavo Saposnik**, MD, MSc, FAHA, FRCPC; Jeffrey L. Saver, MD, FAHA, FAAN; Eric E. Smith, MD, MPH, FAHA; on behalf of the American Heart Association Stroke Council and Council on Epidemiology. AHA/ASA Scientific Statement: Rationale for the Inclusion and Exclusion of IV tPA Criteria. *STROKE*. 2014 Apr. **Coauthor or Collaborator**.
32. Bushnell C, McCullough LD, Awad IA, Chireau MV, Fedder WN, Furie KL, Howard VJ, Lichtman JH, Lisabeth LD, Piña IL, Reeves MJ, Rexrode KM, **Saposnik G**, Singh V, Towfighi A, Vaccarino V, Walters MR; on behalf of the American Heart Association Stroke Council, Council on Cardiovascular and Stroke Nursing, Council on Clinical Cardiology, Council on Epidemiology and Prevention, and Council for High Blood Pressure Research. Guidelines for the Prevention of Stroke in Women: A Statement for Healthcare Professionals From the American Heart Association/American Stroke Association. 2014 Feb. *Stroke*. 2014 Feb 6. [Epub ahead of print]. **Coauthor or Collaborator**.

33. **Saposnik G**, Cote R, Mamdani M, Thrope K, Raptis S, Redelmeier D, Goldstein L. JURaSSiC: Accuracy of Clinician vs. Risk Score Prediction of Ischemic Stroke Outcomes. *Neurology*. 2013; 81(5):448-55. Impact Factor 8.7. **Principal Author**.
34. **Saposnik G**, Fang J, Kapral MK, Tu JV, Mamdani M, Austin PC, Johnston C; on behalf of Investigators of the Registry of the Canadian Stroke Network and the Stroke Outcome Research Canada (SORCan) Working Group. The iScore Predicts Effectiveness of Thrombolytic Therapy for Acute Ischemic Stroke. *Stroke*. 2012 May;43(5):1315-1322. **Principal Author**.
35. **Saposnik G**, Kapral MK, Liu Y, Raptis R, Hall R, O'Donnell M, Tu J, Mamdani M, Austin PA; Investigators of the Registry of the Canadian Stroke Network; Stroke Outcomes Research Canada (SORCan) Working Group. iScore: A Risk Score to Predict Death early after Hospitalization for an Acute Ischemic Stroke. *CIRCULATION* 2011; 2011 Feb 22;123(7):739-49. Epub 2011 Feb 7. Impact Factor 17. **Principal Author**.

The ability to estimate prognosis in acute stroke patients directly affects treatment decisions for patients. It may also guide supportive care plans, facilitate patient and/or family counseling or discussions pertaining to end-of-life decisions. Unfortunately, few risk scores are available that include simple and relevant clinical variables, including stroke severity on admission. In this large cohort study, we created and validated a risk score model to predict 30-day and 1-year mortality early after hospitalization for patients with an acute ischemic stroke. Our model was designed to include clinical variables easily obtained in the early hours of hospital presentation and is independent of specialized laboratory tests or imaging evaluations. Additionally, this also allows estimating death at small centers and at community hospitals with limited resources. Predictors of mortality included older age, male sex, severe stroke, non-lacunar stroke subtype, glucose ≥ 7.5 mmol/L (135 mg/dL), history of atrial fibrillation, CAD, CHF, cancer, dementia, kidney disease on dialysis and dependency prior to the stroke. Our risk score helps estimate 30-day and 1-year mortality in individuals presenting with an acute ischemic stroke. Examples are provided in the text. An online web based tool is available to estimate mortality by adding individual patient characteristics.

36. **Saposnik G** (Chair), Barinagarrementeria F, Brown RD Jr, Bushnell CD, Cucchiara B, Cushman M, Deveber G, Ferro JM, Tsai FY; on behalf of the American Heart Association (AHA) Stroke Council and the Council on Epidemiology and Prevention. Diagnosis and Management of Cerebral Venous Thrombosis: A Statement for Healthcare Professionals From the American Heart Association (AHA)/ American Stroke Association (ASA). *STROKE* 2011; Apr;42(4):1158-1192. Impact Factor 7.1. **Principal Author**.
37. **Saposnik G**, Young B, Silver B, Beletsky V, Jain V, DiLegge S, Nilanont Y, Hachinski V. Lack of improvement after thrombolytic therapy in Acute Stroke. *JAMA* 2004; 292 (15):1839-44. **Principal Author**.
Cortical involvement, hyperglycemia and longer time to treatment were associated with lack of improvement after thrombolytic therapy for acute stroke. Our work added a different perspective concerning clinical and health system determinants of stroke outcome. In addition, we introduced the importance of assessing the functional status at 24 hours after thrombolysis and its strong correlation with outcome at 3 months.

2. PEER-REVIEWED PUBLICATIONS

Journal Articles

1. Nogueira RG, Qureshi MM, Abdalkader M, Martins SO, Yamagami H, Qiu Z, Mansour OY, Sathya A, Czlonkowska A, Tsivgoulis G, Aguiar de Sousa D, Demeestere J, Mikulik R, Vanacker P, Siegler JE, Kórv J, Biller J, Liang CW, Sangha NS, Zha AM, Czap AL, Holmstedt CA, Turan TN, Ntaios G, Malhotra K, Tayal A, Loochtan A, Ranta A, Mistry EA, Alexandrov AW, Huang DY, Yaghi S, Raz E, Sheth SA, Mohammaden MH, Frankel M, Bila Lamou EG, Aref HM, Elbassiouny A, Hassan F, Menecie T, Mustafa W, Shokri HM, Roushdy T, Sarfo FS, Alabi TO, Arabambi B, Nwazor EO, Sunmonu TA, Wahab K, Yaria J, Mohammed HH, Adebayo PB, Riahi AD, Ben Sassi S, Gwaunza L, Ngwende GW, Sahakyan D, Rahman A, Ai Z, Bai F, Duan Z, Hao Y, Huang W, Li G, Li W, Liu G, Luo J, Shang X, Sui Y, Tian L, Wen H, Wu B, Yan Y, Yuan Z, Zhang H, Zhang J, Zhao W, Zi W, Leung TW, Chugh C, Huded V, Menon B, Pandian JD, Sylaja PN, Usman FS Sr, Farhoudi M, Hokmabadi ES, Horev A, Reznik A, Hoffmann RS, Ohara N, Sakai N, Watanabe D, Yamamoto R, Doijiri R. Global Impact of COVID-19 on Stroke Care and Intravenous Thrombolysis. *Neurology*. 2021 Mar 25;3(12):e2022227. **Coauthor or Collaborator**.

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3. Ozzoude M, Ramirez J, Raamana PR, Holmes MF, Walker K, Scott CJM, Gao F, Goubran M, Kwan D, Tartaglia MC, Beaton D, **Saposnik G**, Hassan A, Lawrence-Dewar J, Dowlatshahi D, Strother SC, Symons S, Bartha R, Swartz RH, Black SE. Cortical Thickness Estimation in Individuals With Cerebral Small Vessel Disease, Focal Atrophy, and Chronic Stroke Lesions. *Front Neurosci*. 2020 Dec 14;14(12):598868. **Coauthor or Collaborator**.
4. Meca-Lallana J, Hernandez-Perez MA, Sempere AP, Brieva L, Garcia-Arcelay E, Terzaghi M, **Saposnik G**, Ballesteros J Meca-Lallan J, et al. Psychometric Properties of the SymptoMScreen Questionnaire in a mild Disability Population of Patients with Relapsing- Remitting Multiple Sclerosis: Quantifying of the Patient's Perspective. *Neurol Ther*. 2020 Jun 9;9(1):173-179. **Coauthor or Collaborator**.
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1. Alet M, Ciardi C, Alemán A, Bando L, Bonardo P, Cea C, Cirio J, Cossio J, Cuculic M, Esnaola MM, García-Pérez F, Giner F, Gómez-Schneider M, Isaac C, Lepera S, Martínez C, Martínez-Lorenzín R, Montes M, Orzuza G, Persi G, Povedano G, Pujol-Lereis V, Quiroga-Narváez J, Romano M, Sabio R, Viglione J, Zurrú MC, **Saposnik G**, Argentinian Stroke and Cerebrovascular Diseases Study Group - Argentine Neurological Society. Cerebral venous thrombosis in Argentina: clinical presentation, predisposing factors, outcomes and literature review. *J Stroke Cerebrovasc Dis*. 2020 Oct 1;29(10):105145. **Senior Responsible Author**.

Letters

1. **Saposnik G.** Predicting functional outcome after intra-arterial thrombolysis in Aspects of Aspects. *STROKE* 2004; 35:7-8, 2004. **Senior author, principal responsible for gathering data, analysis and writing the manuscript.**

Manuscripts

1. **Saposnik G.** Nuevos Agentes antiagregantes. *Rev Ecuatoriana de Neurologia* 7: 1031-401, 1998. **Principal author, literature review, study design, and writing the manuscript.**

Other Publications

1. Feigin VL, Krishnamurthi R, Bhattacharjee R, Parmar P, Theadom A, Hussein T, Purohit M, Hume P, Abbott M, Rush E, Kasabov N, Crezee I, Frielick S, Barker-Collo S, Barber PA, Arroll B, Poulton R, Ratnasabathy Y, Tobias M, Cabral N, Martins SC, Furtado LE, Lindsay P, **Saposnik G**, Giroud M, Bejot Y, Hacke W, Mehndiratta MM, Pandian JD, Gupta S, Padma V, Mandal DK, Kokubo Y, Ibrahim NM, Sahathevan R, Fu H, Wang W, Liu L, Hou ZG, Goncalves AF, Correia M, Varakin Y, Kravchenko M, Piradov M, Saadah M, Thrift AG, Cadilhac D, Davis S, Donnan G, Lopez AD, Hankey GJ and Maujean A. New strategy to reduce the global burden of stroke. **Senior Responsible Author.**
2. Sposato LA, Cipriano LE, **Saposnik G**, Ruiz Vargas E, Riccio PM and Hachinski V. Diagnosis of atrial fibrillation after stroke and transient ischaemic attack: a systematic review and meta-analysis. *Lancet Neurol.* 2015 Apr;14(4):377-87. doi: 10.1016/S1474-4422(15)70027-X. Epub 2015 Mar 4. **Senior Responsible Author.**
3. Krishnan P, **Saposnik G**, Ovbiagele B, Zhang L, Symons S and Aviv R. Contribution and additional impact of imaging to the SPAN-100 score. *AJNR Am J Neuroradiol.* 2015 Apr;36(4):646-52. doi: 10.3174/ajnr.A4195. Epub 2015 Jan 8. (Trainee publication). **Co-Principal Author.**
4. Arshi B, Ovbiagele B, Markovic D, **Saposnik G** and Towfighi A. Differential effect of B-vitamin therapy by antiplatelet use on risk of recurrent vascular events after stroke. *Stroke.* 2015 Mar;46(3):870-3. doi: 10.1161/STROKEAHA.114.006927. Epub 2015 Feb 3. (Trainee publication). **Senior Responsible Author.**
5. Nikkhah K, Avan A, Shoeibi A, Azarpazhooh A, Ghandehari K, Foerch C, **Saposnik G**, Sasannejad P, Vakili V, Layegh P, Farzadfard MT, Bavarsad Shahripour R, Hosseini MR and Azarpazhooh MR. Gaps and hurdles deter against following stroke guidelines for thrombolytic therapy in Iran: exploring the problem. *J Stroke Cerebrovasc Dis.* 2015 Feb;24(2):408-15. doi: 10.1016/j.jstrokecerebrovasdis.2014.09.012. Epub 2014 Dec 12. **Senior Responsible Author.**
6. Park TH, Redelmeier DA, Li S, Pongmoragot J and **Saposnik G.** Academic year-end changeover and stroke outcomes. *J Stroke Cerebrovasc Dis.* 2015 Feb;24(2):500-6. doi: 10.1016/j.jstrokecerebrovasdis.2014.09.030. Epub 2014 Dec 23. **Senior Responsible Author.**
7. Parmar P, Krishnamurthi R, Ikram MA, Hofman A, Mirza SS, Varakin Y, Kravchenko M, Piradov M, Thrift AG, Norrvig B, Wang W, Mandal DK, Barker-Collo S, Sahathevan R, Davis S, **Saposnik G**, Kivipelto M, Sindi S, Bornstein NM, Giroud M, Bejot Y, Brainin M, Poulton R, Narayan KM, Correia M, Freire A, Kokubo Y, Wiebers D, Mensah G, BinDhim NF, Barber PA, Pandian JD, Hankey GJ, Mehndiratta MM, Azhagammal S, Ibrahim NM, Abbott M, Rush E, Hume P, Hussein T, Bhattacharjee R, Purohit M and Feigin VL. The Stroke Riskometer(TM) App: validation of a data collection tool and stroke risk predictor. *Int J Stroke.* 2015 Feb;10(2):231-44. doi: 10.1111/ijvs.12411. Epub 2014 Dec 10. **Senior Responsible Author.**
8. **Saposnik G**, Fisher M and Schweizer TA. Translational Stroke Research: Where Have We Been and Where are We Going? Interviewing Dr. Marc Fisher (editor of *Stroke*). *Can J Neurol Sci.* 2015 Jan;42(1):2-6. doi: 10.1017/cjn.2014.119. Epub 2014 Dec 16. **Senior Responsible Author.**
9. **Saposnik G**, Fonarow GC, Pan W, Liang L, Hernandez AF, Schwamm LH and Smith EE. Guideline-directed low-density lipoprotein management in high-risk patients with ischemic stroke: findings from Get with the Guidelines-Stroke 2003 to 2012. *Stroke.* 2014 Nov;45(11):3343-51. doi: 10.1161/STROKEAHA.114.006736. Epub 2014 Oct 9. **Senior Responsible Author.**

10. Kamal N, Benavente O, Boyle K, Buck B, Butcher K, Casaubon LK, Cote R, Demchuk AM, Deschaintre Y, Dowlatshahi D, Gubitz GJ, Hunter G, Jeerakathil T, Jin A, Lang E, Lanthier S, Lindsay P, Newcommon N, Mandzia J, Norris CM, Oczkowski W, Odier C, Phillips S, Poppe AY, **Saposnik G**, Selchen D, Shuaib A, Silver F, Smith EE, Stotts G, Suddes M, Swartz RH, Teal P, Watson T and Hill MD. Good is not Good Enough: The Benchmark Stroke Door-to-Needle Time Should be 30 Minutes. *Can J Neurol Sci*. 2014 Nov;41(6):694-6. doi: 10.1017/cjn.2014.41. Epub 2014 Oct 20. (Trainee publication). **Coauthor or Collaborator**.
11. Ovbiagele B and **Saposnik G**. Risk index and thrombolytic treatment in acute ischemic stroke--reply. *JAMA Neurol*. 2014 Oct;71(10):1326. doi: 10.1001/jamaneurol.2014.2297. **Senior Responsible Author**.

4. SUBMITTED PUBLICATIONS

Journal Articles

1. Bart M. Demaerschalk, MD, MSc, FRCPC, Chair; Dawn O. Kleindorfer, MD, FAHA, Co-Chair; Opeolu M. Adeoye, MD, MS; Andrew M. Demchuk, MD, FRCPC; Jennifer E. Fugate, DO; James C. Grotta, MD; Alexander A. Khalessi, MD, MS; Elad I. Levy, MD, FACS, FAHA, FAANS; Judith H. Lichtman, PhD, MPH, FAHA; Yuko Y. Palesch, MD; Shyam Prabhakaran, MD, MS, FAHA; **Gustavo Saposnik**, MD, MSc, FAHA, FRCPC; Jeffrey L. Saver, MD, FAHA, FAAN; Eric E. Smith, MD, MPH, FAHA; on behalf of the American Heart Association Stroke Council and Council on Epidemiology. AHA/ASA Scientific Statement: Rationale for the Inclusion and Exclusion of IV tPA Criteria. *STROKE*. 2014 Apr. **Coauthor or Collaborator**.
2. Cheryl Bushnell, **Gustavo Saposnik**. Evaluation and Management of Cerebral Venous Thrombosis. *Continuum*. **Senior Responsible Author**.

F. Intellectual Property

1. COPYRIGHTS

- 2015 Jul **Educational intervention to overcome therapeutic inertia: the traffic light system**. Applied. Canada. *Pilot tested RCT evaluating the feasibility and efficacy of the traffic light system strategy to overcome therapeutic inertia*.
- 2012 Jan **iScore thrombolysis Web tool**. Applied. Canada. Joint Holder Name(s): Chi-Ming Chow, Edward Brawer. *The iScore (Ischemic Stroke Risk score) is a recently developed and validated tool to assist clinicians to estimate the risk of death at 30-day, at 1-year (Circulation 2011; 123: 739-49), and functional outcomes (Stroke 2011 in press) during the initial assessment in the Emergency Department or early after hospital admission for patients with an acute ischemic stroke. The web was recently updated to include the iScore ability to estimate outcomes after thrombolysis.*
- 2011 Jul **iScore iPhone version**. Applied. Canada. Joint Holder Name(s): Chi-Ming Chow, Edward Brawer. *The iScore web and iPhone application are objective tools to stratify patients and estimate the risk of a poor functional outcome after an ischemic stroke. It may be used to discuss prognosis, and guide end-of-life care and discharge planning. From the health care perspective, the iScore may be used to help policymakers plan resources, which may result in optimized access to stroke care and rehabilitation services.*
- 2011 Feb **iScore Web tool**. Applied. Canada. Joint Holder Name(s): Chi-Ming Chow, Edward Brawer. *The iScore (Ischemic Stroke Risk score) is a recently developed and validated tool to assist clinicians to estimate the risk of death at 30-day, at 1-year (Circulation 2011; 123: 739-49), and functional outcomes (Stroke 2011 in press) during the initial assessment in the Emergency Department or early after hospital admission for patients with an acute ischemic stroke. The iScore helps categorize patients with an acute ischemic stroke from very low to very high average risk, using clinical parameters and comorbid conditions, including: age, sex, stroke severity, stroke subtype, smoking status, preadmission*

dependency, and the presence or absence of atrial fibrillation, heart failure, previous myocardial infarction, cancer, renal failure, and hyperglycemia on admission.

G. Presentations and Special Lectures

1. INTERNATIONAL

Invited Lectures and Presentations

- 2021 Mar 19 **Invited Lecturer.** Accuracy of Risk prognostic scores in palliative care. American Heart Association. New Orleans, United States. Presenter(s): **Saposnik, G.**
- 2020 Dec 17 **Keynote Speaker.** Lessons learned in Decision making (MSL). Medical Department, Roche. Santiago, Chile. Presenter(s): **Saposnik, G.** 1-day workshop.
- 2020 Nov 27 **Invited Speaker.** The NOAC choice to protect the heart and brain. University of Mahidol, Thailand. Hua Hin, Thailand. Presenter(s): **Saposnik, G.** Keynote speaker.
- 2020 Nov 25 **Invited Speaker.** Update on Patient selection for EVT in Acute Stroke Care. University of Mahidol, Thailand. Bangkok, Thailand. Presenter(s): **Saposnik, G.**
- 2020 Nov 24 **Keynote Speaker.** Decision making under uncertainty in the management of Multiple Sclerosis (Neurology group). Medical Department, Roche. Santiago, Chile. Presenter(s): **Saposnik, G.** 2-day workshop.
- 2020 Nov 17 **Keynote Speaker.** Decision making under uncertainty (Hematology group). Medical Department, Roche. Santiago, Chile. Presenter(s): **Saposnik, G.** 2-day workshop (Nov 17-18).
- 2020 Aug 5 **Keynote Speaker.** Foundations of Therapeutic Inertia. Department of Neuroeconomics, University of Zurich. Zurich, Zürich (de), Switzerland. Presenter(s): **Saposnik, G.**
- 2020 Feb 19 **Speaker.** Improving ED efficiency and Evaluation. American Heart Association. Los Angeles, California, United States. Presenter(s): **Saposnik, G.**
- 2020 Feb 7 **Speaker.** Decision making under uncertainty: lessons learned from Neuroeconomics. Li Ka Shing Knowledge Institute. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2019 Dec 10 **Invited Speaker.** Therapeutic Inertia. EXCEMED. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2019 Dec 3 **Invited Speaker.** Unlocking doctors mindset. Boston, United States. Presenter(s): **Saposnik, G.** Workshop.
- 2019 Dec 3 **Chair.** Decision making under uncertainty. Boston, United States. Presenter(s): **Saposnik, G.** Workshop.
- 2019 Dec 2 **Invited Speaker.** Homocysteine and Cerebral Venous Thrombosis. Boston, United States. Presenter(s): **Saposnik, G.** Workshop.
- 2019 Aug 22 **Keynote Speaker.** What is Therapeutic Inertia in Multiple Sclerosis? INEBA Foundation and Medical Department, Roche. Buenos Aires, Argentina. Presenter(s): **Saposnik, G.**
- 2019 Aug 22 **Chair.** Treatment decisions in Multiple Sclerosis. INEBA Foundation and Medical Department, Roche. Buenos Aires, Argentina. Presenter(s): **Saposnik, G.** Half-day workshop and case-based scenarios.
- 2019 Jul 1 **Invited Speaker.** Factors associated with Therapeutic Inertia. European Association of Neurology Meeting (EAN). Oslo, Norway. Presenter(s): **Saposnik, G.**
- 2019 Jun 1 **Invited Speaker.** Patient selection for EVT in Acute Stroke Care. University of Mahidol, Thailand.

- Bangkok, Thailand. Presenter(s): **Saposnik, G.**
- 2019 May 28 **Invited Speaker.** How to write a scientific publication? University of Mahidol, Thailand. Bangkok, Thailand. Presenter(s): **Saposnik, G.**
- 2019 Mar 14 **Keynote Speaker.** Decision making under uncertainty in Acute Stroke Care: applying principles from Neuroeconomics. Division of Neurology - University of Perugia. Perugia, Italy. Presenter(s): **Saposnik, G.**
- 2018 Dec 9 **Invited Speaker.** Therapeutic Inertia: associated factors. EXCEMED. Toronto, Canada. Presenter(s): **Saposnik, G.**
- 2018 Nov 1 **Invited Speaker.** Diagnosis and management of ESUS. AHA- The Brain Heart Connection. Chicago, United States. Presenter(s): **Saposnik, G.**
- 2018 Oct 29 **Invited Speaker.** Virtual reality in stroke rehabilitation. World Stroke Organization. Montreal, Quebec, Canada. Presenter(s): **Saposnik, G.**
- 2018 Aug 17 **Keynote Speaker.** ESUS: diagnosis and management. Neurological Society of Argentina. Buenos Aires, Argentina. Presenter(s): **Saposnik, G.**
- 2018 May 5 **Invited Speaker.** Decision making in Endovascular thrombectomy. 5T. Banff, Alberta, Canada. Presenter(s): **Saposnik, G.**
- 2017 Oct 4 **Distinguished Speaker.** Virtual reality in Stroke Rehabilitation. Brazilian Stroke Conference. Brazil. Presenter(s): **Saposnik, G.**
- 2017 Sep 16 **Distinguished Speaker.** Decision making in Acute Stroke Care: An update. Korean Stroke Conference. Seoul, Korea, Republic Of. Presenter(s): **Saposnik, G.**
- 2017 Sep 16 **Invited Speaker.** Decision making in Acute Stroke Care: Lessons learned from Neuroeconomics. Yonsei University. Seoul, Korea, Republic Of. Presenter(s): **Saposnik, G.**
- 2017 Jun 30 **Invited Speaker.** Decision making in Atrial Fibrillation. ESTAR Symposium. Santiago, Chile. Presenter(s): **Saposnik, G.**
- 2017 Mar 22 **Keynote Speaker.** Decision making under uncertainty: lessons learned from Neuroeconomics. Symposium Roche. Madrid, Spain. Presenter(s): **Saposnik, G.**
- 2017 Mar 22 **Chair.** Actualización en la Toma de Decisiones. Symposium Roche. Madrid, Spain. Presenter(s): **Saposnik, G.** 5 participants with different expertise (general practitioner, financial advisor, professional poker player, policymaker and a neurologist) discussed about their approach in decision-making.
- 2016 May 12 **Invited Speaker.** Virtual reality in Stroke rehabilitation. World Congress of NeuroRehabilitation. Philadelphia, Pennsylvania, United States. Presenter(s): **Saposnik, G.**
- 2016 Feb 19 **Invited Speaker.** EVREST Multicenter. International Stroke Conference - Late Breaking Science News. Los Angeles, California, United States. Presenter(s): **Saposnik, G.**
- 2016 Feb 19 **Facilitator.** Acute Nonendovascular Treatment- Oral abstracts. International Stroke Conference. Los Angeles, California, United States. Presenter(s): **Saposnik, G.** moderator 7:00- 8:00 am (orals) 6 sessions in category of Acute Non-endovascular Treatment Oral Abstracts.
- 2016 Feb 18 **Invited Speaker.** Decision making in Acute Stroke Care Lessons learned from Neuroeconomics. International Stroke Conference. Los Angeles, California, United States. Presenter(s): **Saposnik, G.** oral presentation 7:57- 8:15 am.
- 2016 Feb 18 **Invited Speaker.** Physicians' preferences in the Management of Silent Stroke results from World-wide survey. International Stroke Conference. Los Angeles, California, United States. Presenter(s): **Saposnik, G.** oral presentation 5:15- 5:20pm.
- 2016 Feb 18 **Invited Speaker.** Electronic Decision Support for Improvement of Contemporary Therapy for Stroke

- Prevention (EDICST). International Stroke Conference. Los angeles, California, United States. Presenter(s): **Saposnik, G.** presentation 6;15- 6:45 pm.
- 2016 Feb 18 **Invited Speaker.** Influence of Aversion to Uncertainty in STROKE care. International Stroke Conference. Los angeles, California, United States. Presenter(s): **Saposnik, G.** 6:15- 6;45pm.
- 2016 Feb 17 **Invited Speaker.** Virtual Reality in Stroke Rehabilitation results from EVREST multicenter Trial. International Stroke Conference. Los angeles, California, United States. Presenter(s): **Saposnik, G.**
- 2016 Feb 17 **Invited Speaker.** Decision making in Acute Stroke care. International Stroke Conference. Los angeles, California, United States. Presenter(s): **Saposnik, G.** LBPG Incidence and 390day case-fatality of first ever stroke and transient Ischaemic attack 9 6;15- 6;45 pm.
- 2016 Feb 17 **Invited Speaker.** Effects of Chronic Stroke on Brain Function while Driving. ISC. Los Angeles, California, United States. Presenter(s): **Saposnik, G.**
- 2016 Feb 17 **Invited Speaker.** Increased Risky Driving in Acute Compared to Chronic Ischemic Stroke Drivers. International Stroke Conference. Los angeles, California, United States. Presenter(s): **Saposnik, G.** 6;15- 6;45 pm.
- 2016 Feb 17 **Invited Speaker.** Decision making in Acute Stroke care. International Stroke Conference. Los angeles, California, United States. Presenter(s): **Saposnik, G.**
- 2015 May 28 **Keynote Speaker.** Decision making in Acute Stroke Care. University of Zurich. Zurich, Switzerland. Presenter(s): **Saposnik, G.**
- 2015 Apr 27 **Keynote Speaker.** Decision making in Acute Stroke Care. Grenoble University. Grenoble, France. Presenter(s): **Saposnik, G.**
- 2014 Nov 20 **Keynote Speaker.** Decision making in Acute Stroke Care. National Congress of Neurology. Valencia, Spain. Presenter(s): **Saposnik, G.**
- 2014 Nov 14 **Invited Speaker.** Virtual Reality in Stroke Rehabilitation; from benchmark to bedside. Bangkok, Thailand. Presenter(s): **Saposnik, G.**
- 2014 Nov 11 **Keynote Speaker.** The Challenges of treating Stroke in Octogenarians. Annual Stroke Conference. Bangkok, Thailand. Presenter(s): **Saposnik, G.**
- 2014 Nov 7 **Invited Speaker.** Novel advances in Stroke Rehabilitation: Update on Virtual Reality. International Congress of Neuroepidemiology. Kuala Lumpur, Malaysia. Presenter(s): **Saposnik, G.**
- 2014 Nov 6 **Invited Speaker.** Stroke Outcomes Research. Bangkok, Thailand. Presenter(s): **Saposnik, G.** Stroke Outcomes Research.
- 2014 Nov 5 **Invited Speaker.** Stroke Outcomes Research. Bangkok, Thailand. Presenter(s): **Saposnik, G.** Stroke Outcomes Research.
- 2014 Aug 9 **Presenter.** How to organize and use stroke registry for research. Annual Stroke Conference. Korea, Korea, Republic Of. Presenter(s): **Saposnik, G.**
- 2014 Feb 13 **Presenter.** Assessing Individual Risk and Benefits of Acute Therapies in the Oldest Old. International Stroke Conference. San Diego, United States. Presenter(s): **Saposnik, G.**
- 2013 Oct 8 **Presenter.** Socioeconomic status and Stroke. Wolrd Neurology Congress. Vienna, Austria. Presenter(s): **Saposnik, G.**
- 2013 Sep 24 **Speaker.** Socioeconomic status and Stroke. Wolrd Neurology Congress. Vienna, Austria. Presenter(s): **Saposnik, G.**
- 2013 Sep 23 **Chair.** Free Papers in Stroke Session 15. Wolrd Neurology Congress. Vienna, Wien, Austria. Presenter(s): **Saposnik, G.**

- 2013 Aug 16 **Invited Lecturer.** Siriraj Annual Neurology Conference. Bangkok, Thailand. Presenter(s): **Gustavo Saposnik.** Principles from the Industrial sector to Neurology.
- 2013 Feb 8 **Presenter.** Virtual Reality and the brain reward system. International Stroke Congress. Honolulu, Hawaii, United States. Presenter(s): **Saposnik, G.**
- 2013 Feb 7 **Presenter.** Honolulu, Hawaii, United States. MP91- How reliably do clinicians predict stroke outcomes? results from JURaSSIC.
- 2013 Feb 7 **Presenter.** AHA International Stroke Conference. Honolulu, Hawaii, United States. Poster CT P14 Efficacy of Virtual Reality using Wii Gaming Technology in Stroke Rehabilitation (EVREST Multicentre).
- 2013 Feb 6 **Presenter.** International Stroke Conference AHA 2013. Honolulu, Hawaii, United States. Virtual Reality Gaming Technology Engaging the Brain reward system in Stroke Rehabilitation.
- 2013 Feb 6 **Presenter.** AHA International Stroke Conference. Honolulu, Hawaii, United States. POSTER MP96 The Isoscore Predicts Clinical Response to Thrombolysis.
- 2012 Dec 14 **Presenter.** Predicting Stroke Outcomes. Ramos Mejia Hospital- University of Buenos Aires. Buenos Aires, Ciudad Autónoma de Buenos Aires, Argentina. Presenter(s): **Saposnik, G.**
- 2012 Dec 14 **Presenter.** EVREST Multicenter and Virtual reality in Stroke rehabilitation. Ramos Mejia Hospital- University of Buenos Aires. Buenos Aires, Ciudad Autónoma de Buenos Aires, Argentina. Presenter(s): **Saposnik, G.**
- 2012 Dec 12 **Presenter.** Virtual Reality and Stroke Rehabilitation. INECO. Buenos Aires, Ciudad Autónoma de Buenos Aires, Argentina. Presenter(s): **Saposnik, G.**
- 2012 Oct 11 **Presenter.** Virtual reality: it is not just a toy. World Stroke Congress. Brasilia, Brazil. Presenter(s): **Saposnik, G.** oral presentation.
- 2012 Oct 11 **Presenter.** The iScore predicts clinical response after tPA for an acute ischemic stroke. World Stroke Congress. Brasilia, Brazil. Presenter(s): **Saposnik, G.**
- 2012 Oct 10 **Presenter.** Stroke Guidelines Development. World Stroke Congress. Brasilia, Brazil. Presenter(s): **Saposnik, G.** oral presentation.
- 2012 Feb 1 **Invited Speaker.** Macro-economic Indicators and Stroke: A Link to the Current MDGs? International Stroke Conference 2012. New Orleans, Louisiana, United States. Presenter(s): **Saposnik, G.**
- 2012 Feb 1 **Invited Speaker.** Virtual Reality in Stroke Rehabilitation: An overview. International Stroke Conference 2012. New Orleans, Louisiana, United States. Presenter(s): **Saposnik, G.**
- 2012 Feb **Presenter.** Honolulu, Hawaii, United States. Poster MP91- How Reliably do clinician predict stroke outcomes?(results from JURaSSIC.
- 2012 Feb **Presenter.** Honolulu, Hawaii, United States. Poster MP91- How Reliably do clinician predict stroke outcomes?(results from JURaSSIC.
- 2011 Nov 17 **Presenter.** Management of anticoagulation with Dabigatran in patients with atrial fibrillation. National Congress of Neurology. Barcelona, Spain.
- 2011 Feb 11 **Presenter.** AHA Scientific Statement on the Diagnosis and Management of Cerebral venous Thrombosis. International Stroke Conference. Los Angeles, California, California, United States. Presenter(s): **Saposnik, G.**
- 2011 Feb 10 **Presenter.** Stroke Epidemiology and Outcomes in the older old. International Stroke Conference. Los Angeles, California, California, United States. Presenter(s): **Saposnik, G.**
- 2010 Jun 8 **Presenter.** Effectiveness of Virtual Reality Exercises using Wii Gaming technology in Stroke Rehabilitation(EVREST): A randomized clinical trial and proof of principle. Quebec City Convention

Gustavo SAPOSNIK

Centre. Quebec, Ontario, Canada.

- 2010 May 27 **Invited Speaker.** Socioeconomic Status and Stroke. European Stroke Conference. Barcelona, Spain.
- 2010 May 27 **Invited Speaker.** Effectiveness of virtual reality using Wii gaming technology in stroke rehabilitation (EVREST): a randomised clinical trial and proof of principle. European Stroke Conference. Barcelona, Spain. Presenter(s): G. Saposnk, R. Teasell, M. Mamdani, K.E. Thorpe, D. Cheung, J. Willems, J. Hall, W. McIlroy, M. Bayley, L.G. Cohen.
- 2010 Apr 14 **Presenter.** A Multi-Center Study Assessing the Impact of Seizures in Mortality after Ischemic Stroke. 62nd AAN Annual Meeting. Ontario, Canada. S29.007.
- 2010 Apr 13 **Presenter.** Stroke-Associated Pneumonia (SAP): Risk Factors for its Development and Affect on Stroke Outcome. 62nd AAN Annual Meeting. Ontario, Canada. S02.006.
- 2010 Feb 24 International Stroke Conference. San Antonio, Texas, United States. Presenter(s): Dr. **Gustavo Saposnik.**
- 2009 Feb 19 **Presenter.** Impact of Seizures in Morbidity and Mortality After Stroke: Results From The Registry of The Canadian Stroke Network. International Stroke Conference. San Diego, California, United States. Presenter(s): **Saposnik, Gustavo.**
- 2009 Feb 19 **Presenter.** Homocysteine Lowering Therapy and Stroke Risk, Severity and Disability: Results From The Hope-2 Trial. International Stroke Conference. San Diego, California, United States. Presenter(s): **Saposnik, Gustavo.**
- 2008 Dec 19 **Invited Speaker.** Stroke program in Canada. Can we replicate the model in Argentina? First Canadian-Argentinian Stroke Forum. Buenos Aires, Buenos Aires, Argentina. Presenter(s): **Gustavo Saposnik.**
- 2008 Sep 10 **Invited Speaker.** Hospital Determinants of Stroke Outcome. Iberoamerican Stroke Meeting. Cartagena, Colombia.
- 2008 Feb 20 **Presenter.** Gender Differences in the Management of Cerebrovascular Disease: The Challenge of Secondary Prevention. International Stroke Conference. New Orleans, Louisiana, United States.
- 2008 Feb 20 **Presenter.** Low-income, Low-hospital Volume and High Stroke Mortality: The Puzzling Route of Inequity. International Stroke Conference. New Orleans, Louisiana, United States. Presenter(s): **Saposnik, G.**
- 2008 Feb 20 **Presenter.** Indicators of Quality of Care in the Stroke Registry in Argentina. International Stroke Conference. New Orleans, Louisiana, United States. Presenter(s): Sposatto, L.
- 2008 Feb 20 **Presenter.** Differences in Target Achievement Among Patients with Cardiovascular, Stroke or Combined Disease. International Stroke Conference. New Orleans, Louisiana, United States.
- 2008 Feb 20 **Presenter.** Comparing Variables Associated with 7-day, 30-day and 1-year Stroke Mortality Indicators. International Stroke Conference. New Orleans, Louisiana, United States.
- 2008 Feb 20 **Presenter.** Organized Care and Impact on Stroke Outcome. International Stroke Conference. New Orleans, Louisiana, United States.
- 2008 Feb 20 **Presenter.** Stroke Mortality in the Argentinian Stroke Registry (RENACER). International Stroke Conference. New Orleans, Louisiana, United States.
- 2008 Feb 20 **Presenter.** Differences in stroke outcome between men and women in RENACER. International Stroke Conference. New Orleans, Louisiana, United States.
- 2008 Feb 20 **Presenter.** Angioedema in Acute Stroke After t-PA. International Stroke Conference. New Orleans, Louisiana, United States.
- 2007 Jun 28 **Invited Speaker.** Secondary stroke prevention: Is that different in women vs men? 9th International Conference of Cerebrovascular Disease. Buenos Aires, Argentina. Round table: Non-pharmaceutical

sponsored research.

- 2007 Jun 28 **Invited Speaker.** The panvascular patient: the neurological perspective. 9th International Conference of Cerebrovascular Disease. Buenos Aires, Argentina. Round table: Non-pharmaceutical sponsored research.
- 2007 Jun 28 **Chairman.** Thrombolytic therapy for acute stroke: IV + IA t-PA. 9th International Conference of Cerebrovascular Disease. Buenos Aires, Argentina. Round table: Non-pharmaceutical sponsored research.
- 2007 Apr 28 **Presenter.** Weekends: A Dangerous Time for Having a Stroke? 59th American Academy of Neurology Annual meeting. Boston, Massachusetts, United States.
- 2007 Feb 6 **Presenter.** Stroke Mortality: High volume, Low Hospital Mortality. International Stroke Conference. San Francisco, California, United States. Presenter(s): **Saposnik, G.**
- 2000 Jun 17 **Program chair and lecturer Stroke Units.** International Symposium of Stroke and Critical Care. Buenos Aires, Argentina.

Presented Abstracts

- 2013 Feb 7 **Presenter.** AHA International Stroke Conference. Honolulu, Hawaii, United States. POSTER :Atrial Fibrillation in Ischemic Stroke: Predicting Response to Trhombolysis and Clinic outcomes.
- 2011 Feb 10 **Presenter.** Stroke care and Outcomes and patients with stroke and pre-existing dementia. International Stroke Conference. Los Angeles, California, California, United States. Presenter(s): **Saposnik, G.** Raptis. R, Rochon. P, Liu. Y, Kapral. M, Mamdani. M.
- 2010 May 27 **Presenter.** Stroke-associated pneumonia (SAP): do community and academic hospitals have similar incident risk and outcomes? European Stroke Conference. Barcelona, Spain. Presenter(s): O. Finlayson, M.K. Kapral, R. Hall, E. Asllani, D. Selchen, **G. Saposnik.** Poster Presentation.
- 2010 May 27 **Presenter.** Stroke-associated pneumonia (SAP): risk factors for its development and impact on stroke outcome. European Stroke Conference. Barcelona, Spain. Presenter(s): O. Finlayson, M.K. Kapral, R. Hall, E. Asllani, D. Selchen, **G. Saposnik.** Poster Presentation.
- 2010 Apr 15 **Presenter.** Stroke-Associated Pneumonia (SAP): Do Academic and Community Hospitals Have Similar Incident Risk and Outcomes? 62nd AAN Annual Meeting. Ontario, Canada. Poster Presentation P06.016.
- 2010 Apr 15 **Presenter.** Chocolate Consumption and Risk of Stroke. 62nd AAN Annual Meeting. Ontario, Canada. Poster Presentation P06.011.
- 2010 Apr 13 **Presenter.** Effectiveness of Virtual Reality Exercises using Wii Gaming techonology in STroke Rehabilitation (EVREST): Results from a Randomized Clinical Trial. 62nd AAN Annual Meeting. Ontario, Canada. Poster Presentation P02.129.
- 2009 Apr 30 **Presenter.** Age Disparities in Stroke Care Delivery and Quality of Care. American Academy of Neurology, Annual Meeting. Seattle, Washington, United States. Presenter(s): **Saposnik, G.,** Black, S., Hakim, A., Fang, J., Tu, J., Kapral, M.
- 2009 Apr 30 **Presenter.** Quality of Acute Ischemic Stroke Care among Senior Citizens. Results from the Argentinian Stroke Registry (ReNACer). American Academy of Neurology, Annual Meeting. Seattle, Washington, United States. Presenter(s): Sposato, L.A., Fustinoni, O., **Saposnik, G.**
- 2009 Apr 30 **Presenter.** Comparing Indicators of Quality of Stroke Care: The Initial Step for a Worldwide Effort. American Academy of Neurology, Annual Meeting. Seattle, Washington, United States. Presenter(s): Sposato, L.A., Kapral, M., Fang, J., Fustinoni, O., **Saposnik, G.**
- 2009 Apr 28 **Presenter.** Virtual Reality Technology in Stroke Rehabilitation: A Pilot Randomized Trial Using Wii

Gaming System. American Academy of Neurology, Annual Meeting. Seattle, Washington, United States. Presenter(s): **Saposnik G.**, Bayley M., Mamdani M., Cheung, D., Hall, J., Dishaw, A., Willems, J., Cohen, L., Teasell, R.

- 2009 Feb 19 **Presenter.** Do All Age Groups Benefit From Organized Stroke Care? International Stroke Conference. San Diego, California, United States.
- 2009 Feb 19 **Presenter.** Age Disparities in Stroke Care Delivery and Quality of Care. International Stroke Conference. San Diego, California, United States.
- 2009 Feb 19 **Presenter.** Development and Validation of a Simple Conversion Model for Comparison of the Canadian Neurological Scale (CNS) and the National Institute of Health Stroke Scale (NIHSS). International Stroke Conference. San Diego, California, United States.
- 2009 Feb 18 **Presenter.** Stroke In The Very Elderly: Hospital Care, Case-fatality and Disposition. International Stroke Conference. San Diego, California, United States.
- 2009 Feb 18 **Presenter.** Comparing Indicators of Quality of Stroke Care: The Initial Step for a Worldwide Effort. International Stroke Conference. San Diego, California, United States.
- 2009 Feb 18 **Presenter.** Higher Mortality Rates in Patients Presenting to Hospital with Acute Stroke on Weekends Maybe Explained by Higher Initial Severity. International Stroke Conference. San Diego, California, United States.
- 2008 Sep 24 **Presenter.** Stroke Outcome in the elderly. International Stroke Society, 6th World Stroke Congress. Vienna, Austria.
- 2008 May 18 **Presenter.** Socioeconomic status, Hospital Volume and Ischemic Stroke Mortality in Canada. World Congress of Cardiology. Buenos Aires, Argentina.
- 2008 Apr 14 **Presenter.** Sex Disparities in ischemic stroke care and outcome in an emerging country. The Argentinian National Stroke Registry (ReNACer). April 2008. (Coauthor). American Academy of Neurology Annual Meeting. Chicago, Illinois, United States.
- 2008 Apr 12 **Presenter.** Acute ischemic stroke outcome in an emerging country. The Argentinian National Stroke Registry (ReNACer). Neurology 2008. (Senior Responsible Author). American Academy of Neurology Annual Meeting. Chicago, Illinois, United States.
- 2008 Apr 12 **Presenter.** Socioeconomic status, Hospital Volume and Fatality after Ischemic Stroke in Canada. (Coauthor). American Academy of Neurology Annual Meeting. Chicago, Illinois, United States.
- 2008 Apr 12 **Presenter.** Escalating levels of Access to in-hospital care and Stroke Mortality. STROKE 2008. (Principal Author). American Academy of Neurology Annual Meeting. Chicago, Illinois, United States.
- 2008 Apr 12 **Presenter.** Stroke outcome in those over 80: A Canadian study of the approaching "Silver Tsunami." NEUROLOGY 2008. (Coauthor). American Academy of Neurology Annual Meeting. Chicago, Illinois, United States.
- 2008 Apr 8 **Presenter.** Assessment of quality of stroke care in emerging countries. The Argentinian National Stroke Registry (ReNACer). April 2008. (Coauthor). American Academy of Neurology Annual Meeting. Chicago, Illinois, United States.
- 2007 Apr 28 **Presenter.** Stroke Mortality: Does Hospital Volume Matter? 59th American Academy of Neurology Annual Meeting. Boston, Massachusetts, United States.

Workshops

- 2005 Sep 21 **Chair.** Update in Clinical Trials in Stroke. Iberoamerican Society of Cerebrovascular Disease, VIII International Meeting of the SIECV. Salvador, Brazil.

2004 Sep 22 **Program chair and lecturer.** Epidemiology of Cerebrovascular disease in Latin-America. Iberoamerican Society of Cerebrovascular Disease, VII International Meeting of the SIECV. Cancun, Mexico.

Other Presentations

2005 Nov Epidemiology of Stroke in Latin-America. Regional Symposium. World Stroke Neurology Meeting. Sidney, Australia.

2005 Jun 2 Predictors of Outcome in Acute Stroke. National Neurology Meeting. INNN. Morelia, Mexico.

2005 Jan 26 Outcome after Acute Stroke. Symposium of Stroke and Vascular Disease. Buenos Aires, Argentina.

2004 Sep 21 Hospital Registries in Latin-American countries. VII Iberoamerican Stroke Meeting. Cancún, Mexico.

2003 May 22 Ischemic Stroke: rethinking the therapeutic opportunities. XII European Stroke Conference. Valencia, Spain.

2002 Oct 29 Management of atrial fibrillation and Stroke. V Iberoamerican Stroke Meeting. Santo Domingo, Dominican Republic.

2001 Nov 26 Posterior Circulation Stroke: mechanisms. IV Iberoamerican Stroke Meeting. San Pedro Sula, Honduras.

2001 Nov 24 Epidemiology of Stroke in LatinAmerica. IV Iberoamerican Stroke Meeting. San Pedro Sula, Honduras.

2000 Sep 17 Case Session presentation. III Iberoamerican Stroke Meeting. La Habana, Cuba.

2000 Sep 17 Hypercholesterolemia and Cerebrovascular disease. III Iberoamerican Stroke Meeting. La Habana, Cuba.

1999 Sep 15 Antiplatelets Agents. II Iberoamerican Stroke Meeting. Mexico DF, Macao.

1999 Sep 14 Genetic aspects of Cerebrovascular disease. II Iberoamerican Stroke Meeting. Mexico DF, Macao.

1998 Oct 21 Subarachnoid Hemorrhage: new clinical strategies. Coordinator Round Table. I Iberoamerican Stroke Meeting. Guayaquil, Ecuador.

1998 Oct 19 Cerebrovascular disease and Genetics. I Iberoamerican Stroke Meeting. Guayaquil, Ecuador.

1998 Oct 19 An Updated of antiaggregant agents. I Iberoamerican Stroke Meeting. Guayaquil, Ecuador.

2. NATIONAL

Invited Lectures and Presentations

2019 Oct 19 **Keynote Speaker.** Decision making under uncertainty. Roche Canada. Mississauga, Ontario, Canada. Presenter(s): **Saposnik, G.**

2019 May 10 **Keynote Speaker.** Decision making in Acute Stroke care: results from UNMASK EVT. Division of Neurology - University of Edmonton. Edmonton, Alberta, Canada. Presenter(s): **Saposnik, G.**

2012 Nov 9 **Presenter.** Predicting outcomes after an acute ischemic stroke. Ottawa Neurology grand Rounds. Ottawa, Ontario, Canada. Presenter(s): **Saposnik, G.** oral presentation.

2012 Oct 2 **Presenter.** Fabry's Disease: A prospective multi-centre cohort study in young adults with cryptogenic stroke. Canadian Stroke Congress. Calgary, Alberta, Canada. Presenter(s): **Saposnik, G.** oral presentation.

2012 Oct 2 **Presenter.** Efficacy of Virtual reality in Stroke Rehabilitation: A multicenter randomized trial. Canadian Stroke Congress. Calgary, Alberta, Canada. Presenter(s): **Saposnik, G.** oral presentation.

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- 2012 Mar 27 **Presenter.** Advances in Stroke Outcomes research. Neurology grand Rounds. London, Ontario, Canada. Presenter(s): **Saposnik, G.** oral presentation.
- 2009 Mar 5 **Invited Speaker.** Stroke Outcomes Research. Calgary Stroke Program, Foothills Medical Centre. Calgary, Alberta, Canada.
- 2008 Nov 7 Annual Investigators Meeting. Canadian Stroke Consortium. Montreal, Quebec, Canada. (Continuing Education).
- 2007 Oct 30 **Presenter.** New imaging techniques for acute stroke. Canadian Stroke Consortium, Annual Course for Residents. Toronto, Ontario, Canada.

Other Presentations

- 2008 Oct 4 National Stroke Conference. Canadian Stroke Consortium. Toronto, Ontario, Canada. (Continuing Education).

3. PROVINCIAL / REGIONAL

Invited Lectures and Presentations

- 2020 Oct 7 **Keynote Speaker.** Depression after stroke. Stroke Team. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2020 Sep 14 **Keynote Speaker.** Critical aspects of Medical Decision Making. Roche. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2020 Sep 14 **Keynote Speaker.** Strategies for behavioural changes: lessons learned in Medical Education. Roche. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.** Workshop.
- 2020 Jan 31 **Invited Speaker.** Decision Making under Uncertainty and Management of Atrial Fibrillation for Stroke Prevention. CAEP- ACMU. Oshawa, Ontario, Canada. Presenter(s): **Saposnik, G.** EM VISION AGENDA-MD VISION TRACK PM.
- 2019 Nov 22 **Invited Speaker.** Making heart to head connections - A neurologist perspective. Division of Neurology, Trillium Hospital. Mississauga, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2019 Nov 20 **Invited Speaker.** Making heart to head connections - A neurologist perspective. Southlake Hospital. Southlake, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2019 Nov 5 **Invited Speaker.** Making heart to head connections - A neurologist perspective. Servier CME. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2019 Oct 25 **Invited Speaker.** Making heart to head connections - A neurologist perspective on NOAC and. SERVIER. Montreal, Quebec, Canada. Presenter(s): **Saposnik, G.**
- 2019 May 10 **Invited Speaker.** Decision making in Acute Stroke Care. University of Alberta. Edmonton, Alberta, Canada. Presenter(s): **Saposnik, G.** Grand Rounds.
- 2019 Jan 31 **Presenter.** Management of TIA and Atrial Fibrillation in the ED. Lakeridge EM Vision Symposium. Oshawa, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2019 Jan 29 **Presenter.** Decision making in Atrial Fibrillation. Servier CME. Cobourg, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2018 Feb 28 **Invited Speaker.** Decision making in MS care. UBC. Vancouver, British Columbia, Canada. Presenter(s): **Saposnik, G.**

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- 2012 Oct 2 **Presenter.** The iScore predicts clinical response after tPA for an acute ischemic stroke. Canadian Stroke Congress. Calgary, Alberta, Canada. Presenter(s): **Saposnik, G.**
- 2012 Oct 1 **Invited Speaker.** Multi-Modal Approaches to Rehabilitation- Virtual Reality. Canada Stroke Congress. Calgary, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2012 May 10 **Presenter.** The iScore predicts clinical response after tPA for an acute ischemic stroke. 10th Annual Scientific Meeting, Heart and Stroke Foundation. Ottawa, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2009 Jun 30 **Presenter.** Advances in Stroke Outcomes Research. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2009 Jun 24 **Presenter.** Do new immigrants have a higher or lower risk of stroke? Heart & Stroke Foundation of Ontario. Toronto, Ontario, Canada.
- 2009 May 22 **Invited Speaker.** S.O.S. Stroke Care: Evaluating gaps along the continuum in stroke care. Women's College Research Institute. Toronto, Ontario, Canada.
- 2009 Feb 3 **Thrombolysis for Stroke: ECASS-3.** University of Toronto, Division of Neurology Stroke Section. Toronto, Ontario, Canada. Presenter(s): Michael Hill, MD. (Continuing Education).
- 2009 Jan 28 **Presenter.** Acute Phase of Stroke: Gender Differences in Treatment and Outcome. South East Toronto Stroke Network, Stroke Best Practice Clinical Day. Toronto, Ontario, Canada.
- 2008 Nov 21 **Presenter.** Escalating access to organized care and stroke outcome. University of Toronto. Toronto, Ontario, Canada. Presenter(s): **Saposnik, Gustavo.**
- 2008 Nov 21 **Speaker.** Escalating Levels of Access to In-hospital Care and Stroke Mortality. Neurology Faculty Research Day. Toronto, Ontario, Canada. (Continuing Education).
- 2007 Mar 23 **Presenter.** Workshop: CT scan in acute stroke. Canadian Stroke Consortium (CSC), Annual Course of Stroke for Residents and Fellows. Toronto, ON, Ontario, Canada. (Continuing Education).
- 2006 Aug 26 **Invited Speaker.** Neurology Esprit Consultant Meeting. Bristol-Myers Squibb Canada. Toronto, Ontario, Canada. (Continuing Education).

Presented Abstracts

- 2008 Nov 21 **Presenter.** Comparing 7-day, 30-day and 1 year stroke mortality indicators. University of Toronto. Toronto, Ontario, Canada. Presenter(s): **Saposnik, Gustavo.**

4. LOCAL

Invited Lectures and Presentations

- 2020 Sep 1 **Invited Speaker.** Approach to patients with transient neurological symptoms. Department of Medicine. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2019 Dec 2 **Presenter.** Stroke Localization. Department of Medicine. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2019 Feb 1 **Invited Speaker.** PFO: the neurologist perspective. Department of Medicine. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2019 Jan 30 **Invited Speaker.** Therapeutic inertia and associated factors. AMGEN. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2019 Jan 30 **Invited Speaker.** Workshop on educational strategies to overcome therapeutic inertia. AMGEN. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**

- 2017 Apr 27 **Invited Speaker.** How we make decisions: lessons learned from Neuroeconomics. SMH Foundation & Li Ka Shing Knowledge Institute. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2016 Dec 9 **Invited Speaker.** Decision Neuroscience: Applying concepts of neuroeconomics to Clinical Care. Division of Neurology - Faculty Research Day. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2016 Nov 28 **Invited Speaker.** Applying concepts from Neuroeconomics into Medical Decision making: Identifying factors associated with Therapeutic inertia. Division of Cardiology. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2016 Nov 25 **Invited Speaker.** Decision Making & Stroke Care: Applying concepts from neuroeconomics. Postgraduate medical Education - University of Toronto. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2016 Oct 7 **Invited Speaker.** Applying concepts from Neuroeconomics into Medical Care. Institute of Health Policy, Management and Evaluation & Li ka Shing KI. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2016 Oct 7 **Invited Speaker.** Applying Principles of Neuroeconomics to Clinical Care (MS). Institute of Health Policy, Management and Evaluation & Li ka Shing KI. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2012 Apr 9 **Presenter.** Advances in Stroke Outcomes research. Ottawa Neurology grand Rounds. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.** oral presentation.
- 2012 Apr 2 **Presenter.** Predicting Clinical Response to Thrombolysis for an Acute Ischemic Stroke. Cardiology Research Rounds, St. Michael's Hospital. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**
- 2012 Mar 27 **Presenter.** Recent advances in stroke outcomes research. Grand Rounds, Hamilton Sciences Centre. Hamilton, Ontario, Canada.
- 2012 Mar 25 **Invited Speaker.** Meet the Experts. Canadian Stroke Consortium, 12th Annual Stroke Review Course for Neurology Residents. Toronto, Ontario, Canada. Presenter(s): Dean, **Saposnik G.**, Silver, Jeerakathil et al.
- 2012 Mar 24 **Presenter.** What tests do young strokes really need? Canadian Stroke Consortium, 12th Annual Stroke Review Course for Neurology Residents. Toronto, Ontario, Canada. Presenter(s): Casaubon, **Saposnik G.**
- 2012 Mar 20 **Invited Speaker.** Recent advances in stroke outcomes research. Grand Rounds, London Health Sciences Centre. London, Ontario, Canada.
- 2011 Oct 17 **Invited Speaker.** Virtual Reality in Stroke Rehabilitation: A Meta - Analysis of the Current Available Evidence. Heart and Stroke Foundation, Ontario. Toronto, Ontario, Canada. Presenter(s): Dr. **Gustavo Saposnik.**
- 2011 Oct 17 **Invited Speaker.** The iScore: A New Tool to Predict Outcomes after an Acute Ischemic Stroke. Heart and Stroke Foundation, Ontario. Toronto, Ontario, Canada. Presenter(s): Dr. **Gustavo Saposnik.**
- 2011 Oct 17 **Invited Speaker.** Virtual Reality in Stroke Rehabilitation: A Meta - Analysis of the Current Available Evidence. Heart and Stroke Foundation, Ontario. Toronto, Ontario, Canada. Presenter(s): Dr. **Gustavo Saposnik.**
- 2011 Mar 7 **Presenter.** Canadian Fabry Stroke Screening Initiative (CFSSI). St. Michael's Hospital. Canada. Presenter(s): Lanthier. S, Selchen. D, **Saposnik. G.**
- 2011 Feb 22 **Presenter.** Predicting Outcomes After Stroke. ICES/CEU Conjoint Rounds. Ontario, Canada. Presenter(s): **Saposnik. G.**
- 2010 Oct 25 **Invited Speaker.** Effectiveness of Virtual Reality using Wii Gaming technology in STroke Rehabilitation (EVREST): A Randomized Clinical Trial and Proof of Principle. 2010 stroke Collaborative (Metro Toronto Convention Centre). Toronto, Ontario, Canada. Presenter(s): Dr. **Gustavo Saposnik.**
- 2010 Oct 25 **Invited Speaker.** Risk of Premature Stroke in Recent Immigrants (PRESARIO): Population-based

- matched cohort study. 2010 stroke Collaborative (Metro Toronto Convention Centre). Toronto, Ontario, Canada. Presenter(s): Dr. **Gustavo Saposnik**.
- 2010 Oct 25 **Presenter**. Effectiveness of Virtual Reality Exercises using Wii Gaming technology in Stroke Rehabilitation(EVREST): A Randomized Clinical Trial and Proof of Principle. Metro Toronto Convention Centre (2010 Stroke Collaborative). Toronto, Ontario, Canada.
- 2010 Jan 19 **Invited Speaker**. Pragmatic Issues in Conduct of Controlled. Health Policy, Management and Evaluation. Toronto, Ontario, Canada. Presenter(s): Dr. **Gustavo Saposnik**.
- 2009 Nov 27 **Presenter**. Effectiveness of Virtual Reality Exercises using Wii Gaming technology in Stroke Rehabilitation(EVREST): Results from a randomized clinical trial. Sutton Place Hotel. Toronto, Ontario, Canada.
- 2009 Nov 20 **Presenter**. Virtual reality in Stroke Rehabilitation. Women's College. Toronto, Ontario, Canada.
- 2009 Jul 20 **Presenter**. Management of Acute Stroke. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2009 Jul 13 **Presenter**. Acute Stroke. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2009 Jun 17 **Presenter**. Intracerebral Haemorrhage in the Young. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2009 May 21 **Presenter**. Chocolate Consumption and Cardiovascular Disease. Stroke Journal Club, St. Michael's Hospital. Toronto, Ontario, Canada.
- 2009 May 4 **Presenter**. Are new immigrants at higher or lower risk of stroke?: Results of a population-based matched cohort study (PRESARIO). Neuroscience Rounds, St. Michael's Hospital. Toronto, Ontario, Canada. (Continuing Education).
- 2009 Feb 23 **Presenter**. Acute Stroke Management. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2008 Sep 8 **Presenter**. Secondary Stroke Prevention - Updated. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2008 Jul 14 **Presenter**. Acute Stroke. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2008 Jul 14 **Presenter**. Acute Stroke. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2008 Jun 27 **Invited Speaker**. Diagnosis and management of acute stroke. Toronto Western Hospital. Toronto, Ontario, Canada. (Continuing Education).
- 2008 Apr 22 **Presenter**. Management of Acute Stroke. St. Michael's Hospital, Neurology Teaching Rounds. Toronto, Ontario, Canada.
- 2008 Jan 8 **Presenter**. Stroke. St. Michael's Hospital. Toronto, Ontario, Canada. (Continuing Education).
- 2007 Nov 7 **Presenter**. Approach to Acute Visual Loss. Neurology Teaching Rounds, St. Michael's Hospital. Toronto, Ontario, Canada. (Continuing Education).
- 2007 Oct 23 **Invited Speaker**. Presentation: Re-thinking Stroke. The Albany Clinic. Toronto, ON, Ontario, Canada. (Continuing Education).
- 2007 Sep 20 **Presenter**. Pharmacological therapy for aphasia in stroke. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2007 May 28 **Presenter**. Volume-outcome relationship: A real phenomenon or an illusion? Neuroscience Rounds. St. Michael's Hospital. Toronto, Ontario, Canada. Presenter(s): Saposnik. (Continuing Education).
- 2007 Mar 23 **Presenter**. CT Scan in Acute Stroke. Canadian Stroke Consortium Annual Workshop. Toronto, Ontario, Canada. (Continuing Education).
- 2007 Feb 23 **Presenter**. (1) Health system determinants of stroke outcome. (2) Advances in Acute Stroke Therapy. J. C. Richardson Neurology Subspecialty Day. Chestnut Conference Centre. Toronto, Ontario, Canada.

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(Continuing Education).

- 2007 Feb 12 **Presenter.** Approach to Visual Loss. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2006 Dec 11 **Presenter.** Management of Acute Stroke. St. Michael's Hospital, Residents' Teaching Rounds. Toronto, Ontario, Canada.
- 2006 Nov 30 **Presenter.** Stroke: High volume, low mortality. Oral presentation, Breakfast of Our Champions Committee. Toronto, Canada. (Continuing Education).
- 2006 Nov 30 **Presenter.** Weekends: A dangerous time for having a stroke? Poster presentation, Breakfast of Our Champions Committee. Toronto, Ontario, Canada.
- 2006 Oct 23 **Presenter.** The Brain, The Heart and Sudden death: Memories from a mysterious marriage. Neuroscience rounds. St. Michael's Hospital. Toronto, Ontario, Canada.
- 2006 Oct 4 **Presenter.** Acute Stroke Therapy: Lost in translation? St. Michael's Hospital, Medical Grand Rounds. Toronto, Ontario, Canada.

Presented Abstracts

- 2008 Jun 26 **Presenter.** Comparing 7-day, 30-day and 1 year stroke mortality indicators. Mobility Program. Toronto, Ontario, Canada. Presenter(s): **Saposnik, Gustavo.**
- 2008 Jun 26 **Presenter.** Escalating Levels of Access to In-Hospital Care and Stroke Mortality. Mobility Program. Toronto, Ontario, Canada. Presenter(s): **Saposnik, Gustavo.**
- 2008 May 26 Annual Education and Research Day. Department of Medicine, St. Michael's Hospital (Metropolitan Hotel. Toronto, Ontario, Canada. (Continuing Education).

City-Wide Neurology Grand Rounds, HJM Barnett Lecture

- 2007 Sep 28 Secondary Prevention of Stroke: Building on 50 years of progress. St. Michael's Hospital. Toronto, Ontario, Canada. (Continuing Education).

Emergency Lecture Series

- 2007 Jul 16 **Presenter.** Acute Stroke. St. Michael's Hospital. Toronto, Ontario, Canada.

Journal Club

- 2008 Jun 27 **Presenter.** Stroke Prognosis. St. Michael's Hospital. Toronto, Ontario, Canada. (Continuing Education).

Neuroscience Rounds

- 2008 Mar 31 **Presenter.** Stroke Prevention Update. St. Michael's Hospital. Toronto, Ontario, Canada. (Continuing Education).

Symposium

- 2016 Oct 7 **Chair.** Behavioral Economics and Health Care. Institute of Health Policy, Management and Evaluation & Li ka Shing Kl. Toronto, Ontario, Canada. Presenter(s): **Saposnik, G.**

Other Presentations

- 2008 Jun 26 Breaking the Boundries in Practice, Research and Education. Grand Hotel. Toronto, Ontario, Canada.

Gustavo SAPOSNIK

(Continuing Education).

- 2007 Dec 7 Research Seminar Series. St. Michael's Hospital. Toronto, Ontario, Canada. (Continuing Education).
- 2007 Nov 29 Issues in Clinical Research. St. Michael's Hospital. Toronto, Ontario, Canada. (Continuing Education).
- 2007 Nov 9 Annual Lecture, Global Health. University of Toronto. Toronto, Ontario, Canada. (Continuing Education).
- 2007 Oct 26 Investigators Meeting. Canadian Stroke Consortium, Yorkville Intercontinental Hotel. Toronto, Ontario, Canada. (Continuing Education).
- 2007 Oct 22 Good Clinical Practice. St. Michael's Hospital. Toronto, Ontario, Canada. (Continuing Education).
- 2007 Sep 27 Treatment of symptomatic and asymptomatic carotid and vertebral artery stenosis. Neuroscience Rounds, Sunnybrook Health Sciences Centre. Toronto, Ontario, Canada. (Continuing Education).
- 2007 Sep 7 Annual Ontario Stroke Day. Le Royal Meridien King Edward Hotel. Toronto, Ontario, Canada. (Continuing Education).

5. OTHER

Workshops

- 2007 Feb 7 **Chair.** Issues and controversies in acute stroke management: The expert debate continues. CME Symposium. Toronto, Ontario, Canada.
- 2000 Jan **Co-Director (Clinical).** Stroke Diagnosis and Management, year 1 course. (As course co-director with Dr Raul C Rey, I had major responsibilities for course design for the clinical component of the course. This included several problem-based learning cases, clinical seminars, and discussion of manuscripts). Faculty of Medicine, University of Toronto.

Other Presentations

Invited Speaker.

H. Teaching and Design

1. INNOVATIONS AND DEVELOPMENT IN TEACHING AND EDUCATION

- 2020 Oct - present Decision making under uncertainty in the diagnosis and management of Dementia, Multilevel Education, Faculty of Medicine, Dept of Medicine, No Division, Neuroeconsolutions.com
We are in the process of developing a workshop created and designed a workshop with simulated case scenarios. The team includes experts in the diagnosis and management of Dementia, primary care physicians who manage patients with cognitive impairment and representatives from the industry. The goal is to overcome knowledge-to-action gaps in the diagnosis and management of cognitive impairment and dementia in primary care.

PLAN:

- 1) Brainstorming (completed Oct 2020)*
- 2) SPRINT strategy to identify gaps (results available upon request - completed Jan 2021)*
- 3) Identification of provider needs (research project designed and approved - March 2021)*
- 4) Implementation of online survey (May 2021)*

- 5) *Regrouping to discuss results (June 2021)*
- 6) *KT plan (Sept-Dec 2021).*

2020 Sep - present

Workshop on Decision Making under uncertainty in the management of Rheumatoid Arthritis, Multilevel Education, Faculty of Medicine, Dept of Medicine, No Division
I created and designed a workshop with simulated case scenarios that target decision-makers (postdoctorate fellows, junior and senior faculty members, general practitioners from the community, and medical liaisons of pharmaceutical companies).

Outline:

- 1) *How we decide*
- 2) *Lessons learned from consumer's research*
- 3) *Advances in therapeutic decisions in RA*
- 4) *Interactive case-based studies in decision making*
- 5) *Group-discussions.*

2020 Mar - present

Workshop on Decision Making under uncertainty in the management of Non-Follicular Lymphomas (NFL), Multilevel Education, Faculty of Medicine, Dept of Medicine, No Division
I created and designed a workshop with simulated case scenarios that target decision-makers (postdoctorate fellows, junior and senior faculty members, general practitioners from the community, and medical liaisons of pharmaceutical companies).

Outline:

- 1) *How we decide*
- 2) *Lessons learned from consumer's research*
- 3) *Advances in therapeutic decisions in NFL*
- 4) *Interactive case-based studies in decision making*
- 5) *Group-discussions.*

Over 80% of participants (~30) highly rated (>=9/10) the workshop (scale 0 to 10).

2019 Mar - present

Workshop on Decision Making under uncertainty, Multilevel Education, Faculty of Medicine, Dept of Medicine, Neurology
I created a workshop that targets a broad audience (undergraduate and postgraduate students, managers, colleagues, medical liaison of pharmaceutical companies).

Outline:

- 1) *History and evolution of decisions*
- 2) *Theories in decision making*
- 3) *Medical-decision making*
- 4) *Case-based studies in decision making*
- 5) *Groupthink and wisdom of crowds.*
- 6) *Strategies to overcome sub-optimal decisions.*

Over 80% of participants (~300) highly rated (>=9/10) the workshop (scale 0 to 10).

2019 Mar - present

Workshop on Decision Making under uncertainty in Multiple Sclerosis (MS) Care, Multilevel Education, Faculty of Medicine, Dept of Medicine, No Division
I created and designed a workshop with simulated case-scenarios that targets decision makers (postdoctorate fellows, junior and senior faculty members, general practitioners from the community, and medical liaison of pharmaceutical companies).

Outline:

- 1) *How we decide*
- 2) *Lessons learned from consumer's research*
- 3) *Advances in therapeutic decisions in MS*
- 4) *Interactive case-based studies in decision making*
- 5) *Group-discussions.*

Over 80% of participants (~100) highly rated (>=9/10) the workshop (scale 0 to 10).

2018 Mar - present

Traffic light system in clinical care, Multilevel Education, Faculty of Medicine, Dept of Medicine, Neurology
The TLS emerged as risk categorization and warning strategy to reduce human errors that

relies on a relatively automatic, well-established and cross-cultural concept to increase the chance of an optimal course of action.(14, 15) The TLS facilitates the decision-making process using traffic light terminology which creates a link between a color, representing a risk level, and an action: red light (“high risk”/ “stop and think”), yellow light (“intermediate risk” / “reassess soon”) and green light (“low risk”/“continue the same strategy”). For example, studies showed that the TLS facilitates healthier food choices by interrupting automatic behavior and triggering a re-evaluation processes.(16) An fMRI study showed that TLS labels enhance the coupling between brain regions associated with valuation (i.e. ventro-medial prefrontal cortex) and self-control.(17) Evidence from the literature suggests that medical decisions leading to TI are likely related to knowledge-to-action gaps.(7). The design and application of the TLS as an educational intervention provides a unique opportunity to overcome knowledge-to-action gaps in MS care.(18)

In a previous pilot study, we assessed the feasibility and potential efficacy of a TLS educational intervention in 25 neurologists from Spain.(19) TI was present in 72.0% of participants in at least one case scenario. The primary feasibility outcome, the completion rate of the study, was 100% (25/25 participants). While not powered to detect a significant difference between groups, our pilot study demonstrated a non-significant reduction in TI for the targeted intervention group relative to the control group (22.6 vs. 33.9% post-intervention; OR 0.57; 95% CI 0.26-1.22).(19) The TLS also showed a high usability score (74.7; 95%CI 70.1-79.2) when tested in a larger study comprising neurologists from Argentina, Chile and Canada.(20)

We just published the results of an RCT showing a 70% reduction in therapeutic inertia (Primary end-point) by applying our simple and pilot-tested educational TLS intervention among neurologists who routinely provide care of MS patients.

2011 Jul - present

iScore web tool, Multilevel Education, Faculty of Medicine, Dept of Medicine, Neurology
Tool to educate residents and fellows how to estimate outcomes after an acute ischemic stroke.

2008 Jul - present

Diagnosis and Management of Cerebral Venous Sinus Thrombosis, Multilevel Education, American Heart Association, Stroke Council
Chair. A Scientific Statement for Health Professionals From a Special Writing Group of the American Heart Association Stroke Council (AHA).

2008 Jul - present

Stroke Fellowship Program, Postgraduate MD, Faculty of Medicine, Dept of Medicine, Neurology, St. Michael's Hospital
Director.

2007 Jul 1 - present

Stroke Case Conference, Multilevel Education, Faculty of Medicine, Dept of Medicine, Neurology, St. Michael's Hospital
Chair. Case-based interactive presentation/discussion about different aspects of cerebrovascular disease.

Goal: To update health care professionals who have a special interest in cerebrovascular diseases, on clinical and management in the field of stroke at St. Michael's Hospital

Objectives:

- 1) Discuss clinical issues and controversial topics related to cerebrovascular diseases (with special emphasis in ischemic stroke)*
- 2) Integrate knowledge about new research developments related to stroke*
- 3) Debate common and peculiar presentation of classic stroke syndromes*
- 4) Translate controversial topics into patient care by using a case-based problem solving approach.*

2007 Jul 1 - present

Stroke Journal Club, Multilevel Education, Faculty of Medicine, Dept of Medicine, Neurology, St. Michael's Hospital
Chair.

2006 Jul - present

Stroke Research Program, Postgraduate MD, Faculty of Medicine, Dept of Medicine, Neurology, St. Michael's Hospital
Director. The stroke education research program is a new initiative for the Division of Neurology at St. Michael's Hospital. The program began with the appointment of Dr. Gustavo

Saposnik as a Clinician-Scientist in the Department of Medicine. The program is in it's fourth year and contributes to research in Stroke. The Stroke Research Program is in partnership with the Applied Health Research Center (AHRC) at St. Michael's Hospital, the Institute for Clinical Evaluative Sciences (ICES), the Stroke Outcomes Research Canada (SORCan) to conduct observational and experimental studies.

This is a unique experience for undergraduate students, residents and clinical fellows to be exposed and participate in stroke research under the supervision of Dr. Gustavo Saposnik.

2002	Faculty of Medicine, Dept of Medicine <i>Evidence-based medicine in Stroke – Case discussions.</i>
2001	Faculty of Medicine, Dept of Medicine <i>Standardized clinical algorithm for the diagnosis of brain death.</i>
2000	Faculty of Medicine, Dept of Medicine <i>Problem-solving approach for undergraduate Neurology Course.</i>
1999	Faculty of Medicine, Dept of Medicine <i>Southern Buenos Aires Stroke Project (electronic clinical database).</i>

I. Research Supervision

1. PRIMARY OR CO-SUPERVISION

Undergraduate Education

2019 Mar - 2020 Mar	Primary Supervisor. Cedrik Ruiz. Supervisee Institution: University of Toronto. <i>Pitfalls in secondary stroke prevention- A QI initiative.</i>
2015 Mar - 2017 Apr	Primary Supervisor. Loren Crump. Supervisee Institution: University of Toronto. <i>Factors associated with silent stroke.</i>
2015 Mar - 2017 Apr	Primary Supervisor. Yue Li. Supervisee Institution: University of Toronto. <i>Management of silent stroke under uncertainty.</i>
2014 Mar - 2015 Oct	Primary Supervisor. Cassandra Ottawa. Supervisee Institution: University of Toronto. <i>Stroke preparedness in Children.</i>
2012 Aug - 2014 Jul	Primary Supervisor. co-op. Jennifer Wu. Supervisee Position: co-Op, Supervisee Institution: University of Waterloo. <i>Clinicians Judgement versus a risk stroke to predict stroke outcomes.</i> Completed 2012.
2011 Mar - 2012 Mar	Primary Supervisor. Rossana Presutti, Medical Science. Supervisee Institution: University of Toronto. <i>Metanalysis - Delirium in acute stroke.</i>
2011 Jan - 2012 Jun	Primary Supervisor. Stephanie Sung. Supervisee Position: co-op, Supervisee Institution: University of Waterloo. <i>Clinics judgement versus a risk stroke to predict stroke outcomes.</i>
2009 Aug - 2011 Jul	Primary Supervisor. BA. Sarah Sahib. Supervisee Position: Master Student, Supervisee Institution: St. Michael's Hospital. <i>Chocolate consumption and risk of Stroke.</i>
2009 Aug - 2010 Jul	Primary Supervisor. BA. Wilson Kwong. Supervisee Position: Master Student, Supervisee Institution: St. Michael's Hospital. <i>Change in prescription patterns after the publication of clinical trials.</i>
2007 Jul - 2009	Co-Supervisor. B. Sc. Alison Cheng. Supervisee Institution: Western University. <i>Rehospitalization after Stroke.</i>

Graduate Education

2016 Aug - 2018 Jun	Primary Supervisor. Tal Milman. Supervisee Institution: University of Toronto. <i>Intervention</i>
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- 2016 May - 2017 Jun **Primary Supervisor.** Jenny Chen. Supervisee Institution: University of Toronto. *Aversion to uncertainty in stroke prevention.*
- 2015 Apr - 2016 Apr **Primary Supervisor.** Stephanie Sung. Supervisee Institution: University of Toronto. *Aversion to uncertainty in stroke prevention.*
- 2013 Mar - 2015 **Co-Supervisor.** Megan Hird. Supervisee Institution: University of Toronto. *Driving fitness after stroke.*
- 2013 Mar - 2015 Mar **Co-Supervisor.** MSc. Kristen Vesely. Supervisee Institution: University of Toronto. *Reporting to the Ministry of transportation after stroke: a retrospective analysis.*
- 2013 Jan - 2019 Mar **Co-Supervisor.** Ann Mansur. Supervisee Institution: Li Ka Shing Institute University of Toronto. *Kiinet vs Wii faming technology in Stroke Rehabilitation.* Completed 2019.
- 2012 Aug - 2014 May **Co-Supervisor.** Sarah Tawadrus. Supervisee Position: master student, Supervisee Institution: York University University of Toronto. *Kinect vs Wii faming technology in Stroke Rehabilitation.*
- 2009 May - 2011 May **Primary Supervisor.** MEd. Chris Ahuja. Supervisee Position: Medical student, Queens University, Supervisee Institution: St. Michael's Hospital. *Socioeconomic status and risk of Stroke.* Awards: John F. Sparks Award (Queens University).

Undergraduate MD

- 2013 Jan - 2013 Apr **Primary Supervisor.** Josh To. Supervisee Position: co-op undergraduate, Supervisee Institution: University of Waterloo. *Stroke Journal: What gets published.*

Postgraduate MD

- 2019 Jul - present **Primary Supervisor.** Core Program. Phavalan Rajendram. Supervisee Institution: University of Toronto. *Identifying Gaps in the management of AF with Anticoagulation in Stroke prevention: A quality improvement study (GiANTS study).*
- 2019 Mar - 2020 Aug **Primary Supervisor.** Clinical Fellow. Jeff Wang. Supervisee Institution: University of Toronto. *Syphilis and Stroke in the HIV era.*
- 2018 Jul - 2020 Aug **Primary Supervisor.** Dr. Noora Almusalam. *Decision making and stroke and MS care, Non-thesis Project.* Supervisor(s): Dr. Gustavo Saposnik.
- 2018 Jul - 2020 Jun **Primary Supervisor.** Core Program. Rami Ramzik. Supervisee Institution: University of Toronto. *Factors associated with delays in tPA and EVT.*
- 2015 Mar - 2020 Jun **Primary Supervisor.** Core Program. Raed Joundi. Supervisee Institution: University of Toronto. *Atrial fibrillation and stroke and Swallowing assessment and outcomes after stroke.*
- 2015 Mar - 2017 Jun **Primary Supervisor.** dr. Charles Kassadjian, Medical Science. Supervisee Institution: University of Toronto. *Inpatient code stroke.*
- 2015 Jan - 2017 Jan **Primary Supervisor.** Visiting Professor. Young Dae Kim. Supervisee Institution: University of Toronto. *Stroke Outcomes Research - Women right and risk of stroke.*
- 2013 Dec - 2016 Dec **Primary Supervisor.** Core Program. David Fam. Supervisee Institution: University of Toronto. *Bilateral six nerve palsy.*
- 2013 Dec - 2014 Dec **Primary Supervisor.** Core Program. Mina Atia. Supervisee Institution: University of Toronto. *CMPA Medico-Legal complaints in Neurology.*
- 2013 Mar - 2018 Aug **Primary Supervisor.** Clinical Fellow. Jitphapa Pongmoragot. Supervisee Institution: St. Michael's Hospital. *Congestive Heart Failure and Stroke.*
- 2012 Nov - 2014 Jun **Primary Supervisor.** Subspecialty. Jenny Tsai. Supervisee Institution: University of Toronto. *Adherence to guidelines after discharge from an acute ischemic stroke.*
- 2012 May - 2015 Jun **Primary Supervisor.** Subspecialty. Davar Nikenshan. Supervisee Institution: University of Toronto. *The iScore predicts clinical outcomes after stroke in patients with and without diabetes.*
- 2012 Mar **Primary Supervisor.** Clinical Fellow. Jitphapa Pongmoragot. Supervisee Institution: St. Michael's Hospital. *Virtual reality using Kinect vs. Nintendo wii in stroke rehabilitation.*

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- 2012 Jan - 2014 Jun **Primary Supervisor.** Subspecialty. Davar Nikenshan. Supervisee Institution: University of Toronto. *Salivary amylase in acute stroke and coronary syndrome: a pilot study.*
- 2011 Jul - 2012 Jun **Primary Supervisor.** Clinical Fellow. Jitphapa Pongmoragot. Supervisee Institution: St. Michael's Hospital. *Bilateral Medullary infarction.*
- 2011 Jul - 2012 Jun **Primary Supervisor.** Clinical Fellow. Jitphapa Pongmoragot. Supervisee Institution: St. Michael's Hospital. *Intracerebral hemorrhage in cerebral venous thrombosis.*
- 2009 Nov - 2010 Nov **Co-Supervisor.** Core Program. Ivan Ying. Supervisee Position: PGY1, Supervisee Institution: Western University. *Risk of Ischemic Stroke in Association With Non-alcoholic Fatty Liver Disease.*
- 2009 Oct **Primary Supervisor.** Clinical Fellow. Sujatha Parthasarathy. Supervisee Institution: St. Michael's Hospital. *Rehospitalization after stroke.*
- 2009 Oct **Primary Supervisor.** Clinical Fellow. Sujatha Parthasarathy. Supervisee Institution: St. Michael's Hospital. *Hemicraniectomies after stroke: a multicentre cohort study.*
- 2009 May - 2011 Jun **Primary Supervisor.** Subspecialty. Krystyna Skrabka. Supervisee Position: Stroke Education, Supervisee Institution: St. Michael's Hospital. *Internal Stroke Code.*
- 2009 May **Primary Supervisor.** Subspecialty. Jaqueline Willems. Supervisee Position: Manager, Stroke Program at St. Michael's Hospital, Supervisee Institution: St. Michael's Hospital. *Internal Stroke Code.*
- 2008 Sep - 2010 Sep **Primary Supervisor.** Subspecialty. Olga Fynlanson. Supervisee Institution: University of Toronto. *Health system determinants of stroke outcome - Pneumonia project.*
- 2008 Aug - 2009 Aug **Primary Supervisor.** Subspecialty. Khalid Al-Hassan. Supervisee Position: Stroke Fellow, Supervisee Institution: St. Michael's Hospital. *Stroke unit benefit by Stroke Subtype.*
- 2006 Oct - 2008 **Primary Supervisor.** Subspecialty. Judith Barnaby. Supervisee Position: RN practitioner Program, Supervisee Institution: University of Buffalo. *"Stroke Box".*

Faculty Development

- 2021 Jan - Pres **Primary Supervisor.** Dr. Sebastian Fridman. Supervisee Institution: University of Western Ontario. *Advances in Medical Imaging in Acute stroke Care.*
- 2015 Mar - 2020 **Primary Supervisor.** Dr. Luciano Sposato, Medical Science. Supervisee Institution: University of Western Ontario. *Stroke in Atrial fibrillation - risk stratification.*
- 2019 Mar - 2020 Oct **Primary Supervisor.** Matias Alet. Supervisee Institution: University of Buenos Aires. *CVT in Argentina.*
- 2016 Mar - 2018 Oct **Primary Supervisor.** 2. Young Dae Kim. Supervisee Institution: University of Yonsei, Soul. *I-score in the South Korea and Public indicators of stroke care in Women.*
- 2016 Jan - 2017 Jan **Primary Supervisor.** Dr. Yohan Jung, Medical Science. Supervisee Institution: University of Toronto. *Environmental changes and stroke.*
- 2015 Mar - 2020 **Primary Supervisor.** 5. Dr. Jorge Burneo, Public Health Sciences. Supervisee Institution: University of Western Ontario. *Stroke and epilepsy.*
- 2015 Jan - 2017 Jan **Primary Supervisor.** Dr. Young Dae Kim. Supervisee Institution: University of Toronto. *Stroke Outcomes Research - Women right and risk of stroke.*
- 2014 Mar - 2015 Dec **Primary Supervisor.** Dr. Luciano Sposato, Medical Science. Supervisee Institution: University of Western Ontario. *The role of reviewers in the acceptance of publications in Stroke Journal.*

Postdoctoral Research Fellow (PhD)

- 2015 Mar - 2020 **Co-Supervisor.** Megan Hird. Supervisee Institution: University of Toronto. *iPad use in stroke rehabilitation.* Completed 2020.
- 2013 Mar - 2014 May **Primary Supervisor.** Dr. Maggie Shi, Medical Science. Supervisee Institution: University of

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2011 Mar - 2012 Mar Toronto. *Metanalysis - Prevalence of fabry disease in Stroke.*
Primary Supervisor. Dr. Maggie Shi, Medical Science. Supervisee Institution: University of Toronto. *Metanalysis - Delirium in acute stroke.*

Research Associate

2016 May - 2018 Jun **Primary Supervisor.** Stavroula raptis. Supervisee Institution: University of Toronto. *Decision making in the management of AF in primary care.*

Other

2012 Jul - 2013 Jul **Primary Supervisor.** Dr. Tai Hwan Park. Supervisee Position: Visiting Professor of Neurology (South Korea), Supervisee Institution: St. Michael's Hospital. *Validation of the iScore in an Asiatic Population using the Korean Stroke Registry.*

2011 Aug - 2013 Jul **Primary Supervisor.** Jitphapa Pongmoragot. Supervisee Institution: St. Michael's Hospital. *1. Pulmonary embolism and stroke, 2. Hemorrhage in cerebral venous thrombosis, 3. Bilateral medullary infarctions.*

2001 - 2002 **Primary Supervisor.** Postdoctoral Studies. Dr. Marianna DiEgidio.

2001 - 2002 **Primary Supervisor.** Postdoctoral Studies. Dr. Natalia Bohorquez.

2001 - 2002 **Primary Supervisor.** Postdoctoral Studies. Dr. Roberto Saizar.

2000 - 2001 **Primary Supervisor.** Postdoctoral Studies. Dr. Andrea Franco.

2000 - 2001 **Primary Supervisor.** Postdoctoral Studies. Dr. Jorge Maurino.

1999 - 2000 **Primary Supervisor.** Postdoctoral Studies. Dr. Leonardo Gonzalez.

1999 - 2000 **Primary Supervisor.** Postdoctoral Studies. Dr. Adriana Luraschi.

2. OTHER SUPERVISION

Graduate Education

Secondary Supervisor

2005 **MSc.** Jason Dang. Supervisee Institution: U of Waterloo. *"Epidemiology of coma across Canada"*.

Postgraduate MD

Thesis Committee Member

2009 Nov **Clinical Fellow.** Dr. James Marriot. *Physicians Profile and Multiple Sclerosis therapy.*

2009 Nov **Clinical Fellow.** Dr. Kirsteen Burton. *Role of imaging in Acute Stroke care.*

2018 Nov **PhD student.** Dr. Mohammad Hussain. *Management of Carotid Artery Stenosis.*

EXAMPLES OF CURRENT POSITIONS & ACCOMPLISHMENTS OF TRAINEES IN THE LAST 5 YEARS

Trainee name	Current position	Awards/Honors
Dr. Luciano Sposato	Associate Professor of Neurology, UWO	H. Barnett Chair in Stroke Research
Dr. Jorge Burneo	Associate Professor of Neurology, UWO	Division Head, Neurology- LHSC, UWO. President, Canadian League Against Epilepsy (CLAE), and the Vice-Chair of the communications council at the American Epilepsy Society
Megan Hird	CC3, Faculty of Medicine, UofT	
Lexie Wilson	CC2, Faculty of Medicine, U of Calgary	
Dr. Tal Milman	PGY 3, OBG, UofT	2019 UofT Student Leadership Award, 2015 Glaucoma Society Students award
Stephanie Sung	Intern, Regulatory Affairs, Johnson & Johnson, Canada	
Dr. Ann Mansur	PGY 3, Neurosurgery Program, UofT	2017 Resident Teaching Award
Dr. Chris Ahuja	Assistant Professor of Neurosurgery, UHN, UofT CEO and CMO at Inteligex, Toronto	2020, Canadian Association of Surgical Research Gold Scapel Award 2020, Ontario Brain Institute Entrepreneur Award
Loren Crump	Occupational Therapist, Vancouver, BC	2018 Best poster presentation
Dr. Phavalan Rajendran	PGY5, UofT Neurology	
Cedrik Ruiz	Student, UofT	2017 TED talk, Ellipses
Dr. Charles Kassardjian	Assistant Professor of Neurology	Founder, Neurology Quality and Innovation Lab (NQIL)
Dr. Young Dae Kim	Professor of Neurology, Yonsei University	
Dr. David Fam	Adjunct Lecturer, SJH, UofT Staff Neurologist, Synergy	
Dr. Noora Almusalam	Director, Stroke Program, Military Hospital, Bahrain	
Dr. Raed Joundi	Master's Student and Stroke Fellow, U of Calgary	2019 AAN Futures in Neurological Research Scholarship 2017 Medicine JM. West Family Memorial Fund 2016 Medicine Chisholm Memorial Fellowship Award 2015 Medicine Chisholm Memorial Fellowship Award 2015 William S. Fenwick Research Fellowship Award
Dr. Jeffrey Wang	Lecturer, UofT Division of Neurology, SMH	
Dr. Atif Zafar	Assistant Professor of Medicine, UofT	Stroke Program Director, acknowledged to reshape the stroke program at SMH
Dr. Meah Gao	Lecturer, UofT Division of Neurology, SMH	WSO Stroke Checklist funds

J. Creative Professional Activities

1. PROFESSIONAL INNOVATION AND CREATIVE EXCELLENCE

2016 Jun - present

Decision making under Uncertainty: development and validation of an educational intervention to overcome therapeutic inertia in MS care.

KNOWLEDGE TO DATE:

1) Therapeutic inertia (TI) is a term introduced in 2006 to define the absence of treatment initiation or intensification in patients when treatment goals are unmet based on recommended guidelines.1-4

TI is a common problem in medical care, affecting both general practitioners and specialists. TI leads to suboptimal quality of care and poorer patients' outcomes. For example, studies from Europe and North America highlighted that over 50% of patients remained with uncontrolled hypertension - a major risk factor implicated in cardiovascular death and stroke.5, 6

2) Our recent studies in the management of atrial fibrillation for stroke prevention and treatment of multiple sclerosis (MS) revealed that one to two thirds of physicians do not escalate treatment when indicated by best practice guidelines.7, 8

3) Knowledge-to-action gap: Despite significant therapeutic advances, many medical conditions (e.g. atrial fibrillation, hypertension, multiple sclerosis,) remain undertreated.1, 9, 10 Physician's factors are accepted as the main component of TI, but remain poorly studied.

4) What are the most common causes of TI? Clinical uncertainty, physicians personality (e.g. low tolerance to uncertainty, aversion to ambiguity), competing demands, nihilism (e.g. physicians skeptical beliefs of the proposed treatment, doubts about patients' adherence, unjustified optimism of the status quo) were recently proposed as factors associated with TI.7, 11-16

5) Given the lack of formal training in risk management and decision-making, educative interventions targeting physicians are needed to increase awareness and ameliorate the effects of therapeutic inertia.

6) Hypothetical links (Facts & hypotheses):

Fact 1: Studies suggest a common neural modulatory network of arousal under uncertainty (ambiguity) involving the activation of the amygdala, ACC, and the orbitofrontal cortex.17-21 Specifically, the exposure to uncertainty triggers an anticipatory response (e.g. manifested by anxiety, fear, arousal) influencing the perception of pain and fear, which modulate our decision-making process.22, 23

Hypothesis 1: We hypothesize that low tolerance to uncertainty or aversion to ambiguity elicit an anticipatory arousal response that leads to therapeutic inertia. We anticipate that the stronger the arousal response to uncertainty (measured using skin conductance or pupillary response), the stronger the therapeutic inertia.

Fact 2: Anticipatory arousal is an index of uncertainty-related learning that influences behavior.20, 24 Emotion regulation reduces aversion to ambiguity by decreasing the activation of the amygdala.25, 26

Hypothesis 2: We anticipate that an educational intervention enhances emotion regulation (e.g. reduced fear/emotional response to uncertainty by facilitating the integration of

previously ignored patients' factors that affect physicians' therapeutic decisions) leading to reduced arousal response. An educational intervention would strengthen deliberative processes, whereas emotion regulation would downregulate automatic emotional processes , both lowering TI.

7) Several concerns have been raised as educational research and medical practice are often not aligned. Recent systematic reviews mostly focused on knowledge gaps in the management of chronic conditions (e.g. hypertension, diabetes, etc).^{16, 27-29} Limited evidence is available regarding effective educational interventions to reduce 'knowledge-to-action' gaps. A meta-analysis comprising 609 eligible studies enrolling 35,226 trainees compared the efficacy of simulation-based educational interventions in clinical skills and medical decisions. The authors showed that a simulation-based educational intervention was more effective than no educational intervention for outcomes of knowledge, skills, and trainee's behavior.³⁰ Other studies using a simulation-based intervention and clinical reasoning revealed a reduction in medical errors.^{31, 32}

8) Framework: Kahneman and Tversky proposed a dual-system theoretical framework to explain decisions under uncertainty. System 1 refers to an automatic, intuitive, unconscious, fast, and effortless mechanism to make most routine decisions. Conversely, system 2 makes deliberate decisions, which are non-programmed, conscious, usually slow and effortful.³³ It has been suggested that most cognitive biases, some of which lead to therapeutic inertia, are likely due to the overuse of system 1 or when system 1 overrides system 2.³⁴⁻³⁶ Accordingly, we anticipate that an educational intervention would strengthen deliberative processes, whereas emotion regulation would downregulate automatic emotional processes , both lowering TI.

OBJECTIVES: The purposes of the present study are:

- i) determine whether low tolerance to uncertainty or aversion to ambiguity elicit an anticipatory arousal response (measured by SCR or pupillary dilation) that leads to therapeutic inertia among practicing physicians.
- ii) To test an educational intervention by applying effective strategies in medical education (e.g. simulation-based intervention using case-scenarios that reduce the knowledge-to-action gap by facilitating the integration of relevant factors that affect patients' outcomes) to reduce the prevalence of therapeutic inertia. We will determine if our educational intervention neuromodulates the arousal-ambiguity pathways by applying methods in Neuroeconomics established as capable of measuring uncertainty (e.g. skin conductance response or pupil diameter).

RESEARCH DESIGN:

We propose a randomized study to evaluate the neuromodulation of anticipatory arousal responses to simulation-scenarios under uncertainty.

Population target: general practitioners and neurologists. Depending on recruitment, we may include other pilot tested case-scenarios targeting general practitioners (GPs) and internists.

Methodology: Participants will be randomized to receiving an educational intervention or control. Each participant will receive 12 PC-based pilot-tested simulation-scenarios (e.g. neurologists will receive MS case-scenarios, GPs would receive case-scenarios for the management of hypertension and atrial fibrillation). Skin conductance response (SCR) and/or pupillary dilation will be measured in all participants prior, during and after completing the intervention using the iMotion or Biopac MP160 system (<https://www.biopac.com/research/>).

Educational intervention (see powerpoint presentation):

The current evidence suggests that medical decisions leading to therapeutic inertia are likely related to knowledge-to-action gaps rather than to knowledge gaps as such. The educational intervention focuses on overcoming the knowledge-to-action gaps affecting physicians.⁴⁸

The action component is the therapeutic decision (e.g. continue on the same treatment, change for another one that would NOT affect the outcome or escalating to a more effective agent). In other words, most physicians are aware and informed about the current management of common medical conditions seen in their daily clinical practice, but fail to integrate available information (e.g. severity of the condition, risk of progression, imaging findings, demographic factors affecting outcomes), and thereby to implement best practice.

A simulation-based educational intervention that facilitates the integration of relevant concepts (e.g. disease course and severity, stratification, and therapeutic options) appeared as the most promising educative intervention to overcome physician's biases, suboptimal decisions, or therapeutic errors.^{31, 32, 49-52} We are proposing the traffic light system (TLS); an educational intervention that facilitates the integration of the aforementioned factors influencing therapeutic decisions.

Previous studies showed that a color-coded system influences the valuation process facilitating optimal choices. For example, a study showed that TLS facilitated healthier choices by interfering with automatic decisions and triggering the re-evaluation process (Ena, Krajbich et al *Judgement and DM* 2016). An fMRI study showed that TLS labels seem to enhance the coupling between brain regions associated with valuation (vmPFC) and self-control. Specifically, "red" traffic light activated the left inferior frontal gyrus/dIPFC, a region implicated in self-control in food choice (Enax et al *Obesity* (2015) 23, 786–792). We are proposing a randomized, multicenter, interactive study to better understand stroke physicians' preferences, risk perception, and therapeutic decisions.

We have developed a behavioral battery comprising 4 experiments and 3 validated surveys to assess physicians' risk preferences, aversion to ambiguity and tolerance to uncertainty.

Preliminary studies in MS care by neurologists and experts and the management of AF in GPs were already completed.

The educational intervention using the TLS is innovative, "hard-wired" to our knowledge and intended to overcome the knowledge-to-action gaps in therapeutic decisions.

2016 Jun - present

Decision making under Uncertainty: a platform to assess therapeutic decisions among physicians, patients and pharmacists.

We created an online assessment tool using Qualtrics platform, including i) case-scenarios derived from most common clinical practice, and ii) a behavioral battery that includes two validated surveys and four experiments (appendix) targeting physicians caring for ischemic stroke patients to evaluate their preferences and recommendations. The behavioral battery was devised by the PI during his PhD in Neuroeconomics in collaboration with the experts in decision neuroscience (also collaborators in this proposal). The behavioral battery comprises experiments designed to assess risk and ambiguity aversion in the health and financial domains (see Appendix).^{56, 58, 59} Ambiguity aversion is defined as dislike for events with unknown probability over events with known probability.⁵⁸ For example, an ambiguity-averse individual would rather choose a treatment where the probability of benefits or side effects is known (even if these are somewhat unfavourable) over one where these probabilities are unknown. Specifically, participants will be asked to choose between a visual option with known 50/50 probability of winning C\$400 or 0 versus an option with unknown probability of the same outcomes. Grey bars represented the degree to which the winning probability was unknown. The degree of ambiguity aversion was defined as the proportion of times participants chose the 50/50 option over the ambiguous option involving the same outcomes. In principle, risk aversion is another factor that may influence clinical decisions. Risk aversion is defined as the tendency to prefer safe payoffs over probabilistic payoffs when the expected value of both options is identical.⁵⁸ A risk-averse participant would thus prefer a treatment that provides a small improvement with certainty over a treatment that provides a larger or no improvement with equal chance (50/50). We will evaluate risk aversion by identifying the safe amount for which a participant is indifferent between the safe and the risky option. This indifference amount, called certainty equivalent, reflects the value

associated to the risky option and facilitates comparison between participants. For example, participants will be asked what would be the minimal certain payoff that they would prefer over the equiprobable gamble of winning C\$ 400 or C\$ 0 (expected value of 200 Canadian dollars). The degree of risk aversion of each individual corresponded to the difference of the expected value of the risky option (200 Canadian dollars) minus the participant's response (proxy of certainty equivalent). A similar visual design and methodology will be used to elicit aversion to risk and ambiguity in the health domains (appendix questions #2 and #4).⁵⁶ Participants will be asked to choose between Treatment A (50% probability of survival) or "Treatment B" (the probability of survival is unknown) with the grey bars quantifying how much is unknown about the probability of survival.

We will also use two standardized surveys to assess physicians' willingness to take risks and tolerance to uncertainty. The German Socio-Economic Panel (SOEP) is a validated survey that evaluates willingness to take risks in different domains (financial matters, own health, driving, own occupation, etc).⁶⁰ We used questions of the form: "How would you rate your willingness to take risks in the following areas...."? Areas included financial matters, driving, occupation, etc. and responses could range from 0 (not at all) to 10 (very much) (see Appendix page 3).

The second survey measured physicians' tolerance to uncertainty in patient care, using the reaction to uncertainty test (see Appendix page 4-5).⁶¹ It comprises five questions to be rated from 0 to 5 that when added gives a total score.⁶² Low tolerance to uncertainty was defined as values below the median of the total score. Further details of the protocol were published elsewhere.⁵⁶ In pilot studies (JURaSSiC, DIScUTIR MS), we have used a similar methodology.^{6, 56, 57.}

Ability to implement randomized trials, cohort and cross sectional study designs using our online platform to test therapeutic decisions

2015 May - present

Decision making under Uncertainty.

Making decisions in medical care is a difficult task involving a variety of cognitive processes. Decision making is defined as the process of examining possibilities, risks, uncertainties, and options, comparing them, and choosing a course of action. Decisions based on erroneous assessments may result in incorrect patient and family expectations, and potentially suboptimal advice, treatment, and prognosis. From the health care perspective, this could lead to higher resource utilization (e.g. hospital admissions, longer length of hospitalization, emergency department visits) and costs. We need to better understand how physicians select patients and make therapeutic decisions.

The Problem

Despite the availability of different tools for risk stratification, it is difficult for expert clinicians to select the best strategy under uncertainty. Clinicians are trained to quickly recognize patterns or critical aspects of particular situations. Some clinicians apply the knowledge they have acquired from previous experience, others use information available at the time of the assessment, others use risk score tools or a combination of the above.

However, it is not clear how clinicians select patients outside RCTs since the inclusion criteria creates restrictive rules which hijack the decision making process. In addition, we have a limited understanding about physicians' beliefs and preferences on the widely available therapeutic options for the optimal management of acute ischemic stroke. As such, it is not known how stroke physicians decide in clinical situations with ambiguous outcomes (unknown probability or uncertain risk of a favorable outcome) in the 'real world'. Moreover, we have limited information about regional variations, private vs. public insurance, academic vs. community, and training-based recommendations (from neurologists, stroke experts and interventional radiologists).

Finally, there is still lack of evidence-based approaches to incorporate patients' preferences into the shared decision making process. As our understanding of acute stroke care continues to be refined, how to account for the uncertain risks, benefits, and patients' preferences at the individual level is a current challenge for the practice of personalized medicine.

The Proposed Solution: Bringing together the recent advances from AF, Acute Stroke and MS Care with Neuroeconomics

Neuroeconomics is the science that studies the principles of how we make decisions. The neuroscience of decision making is based on behavioral economic concepts and mathematical approaches, such as game theory, to predict and model how people make their own choices.

The application of principles from Neuroeconomics (decision neuroscience) can facilitate the elicitation of physicians' therapeutic preferences and beliefs about therapies in these medical conditions.

The present studies will provide evidence about: i) how GPs and experts make decisions under uncertainty, ii) how experts would change their preferences based on their patients' risk assessment, and iv) identify health system factors influencing medical decision in acute stroke and MS care.

A better understanding of physicians' beliefs and preferences under uncertainty would likely improve the quality of care, patients' satisfaction and long-term health cost.

We are proposing a randomized, multicenter, interactive study to better understand stroke physicians' preferences, risk perception, and therapeutic decisions.

We have developed a behavioral battery comprising 4 experiments and 3 validated surveys to assess physicians' risk preferences, aversion to ambiguity and tolerance to uncertainty.

Preliminary studies in MS care by neurologists and experts and the management of AF in GPs were already completed.

2018 Jun - 2020

Effect of an Educational Intervention on Therapeutic Inertia in Neurologists With Expertise in Multiple Sclerosis: A Randomized Clinical Trial.

Importance: Therapeutic inertia (TI) is the failure to escalate therapy when treatment goals are unmet and is associated with low tolerance to uncertainty and aversion to ambiguity in physician decision-making. Limited information is available on how physicians handle therapeutic decision-making in the context of uncertainty.

Objective: To evaluate whether an educational intervention decreases TI by reducing autonomic arousal response (pupil dilation), a proxy measure of how physicians respond to uncertainty during treatment decisions.

Design, setting, and participants: In this randomized clinical trial, 34 neurologists with expertise in multiple sclerosis (MS) practicing at 15 outpatient MS clinics in academic and community institutions from across Canada were enrolled. Participants were randomly assigned to receive an educational intervention that facilitates treatment decisions (active group) or to receive no exposure to the intervention (usual care [control group]) from December 2017 to March 2018. Participants listened to 20 audio-recorded simulated case scenarios as pupil responses were assessed by eye trackers. Autonomic arousal was assessed as pupil dilation in periods in which critical information was provided (first period [T1]: clinical data, second period [T2]: neurologic status, and third period [T3]: magnetic resonance imaging data). Data were analyzed from September 2018 to March 2020.

Interventions: The traffic light system (TLS)-based educational intervention vs usual care (unexposed). The TLS (use of established associations between traffic light colors and actions to stop or proceed) assists participants in identifying factors associated with worse prognosis in MS care, thereby facilitating the treatment decision-making process by use of established associations between red, green, and yellow colors and risk levels, and actions (treatment decisions).

Main outcomes and measures: Pupil assessment was the primary autonomic outcome. To test the treatment effect of the educational intervention (TLS), difference-in-differences

models (also called untreated control group design with pretest and posttest) were used.

Results: Of 38 eligible participants, 34 (89.4%) neurologists completed the study. The mean (SD) age was 44.6 (11.6) years; 38.3% were female and 20 (58.8%) were MS specialists. Therapeutic inertia was present in 50.0% (17 of 34) of all participants and was associated with greater pupil dilation. For every additional SD of pupil dilation, the odds of TI increased by 51% for T1 (odds ratio, 1.51; 95% CI, 1.12-2.03), by 31% for T2 (odds ratio, 1.31; 95% CI, 1.08-1.59), and by 49% for T3 (odds ratio, 1.49; 95% CI, 1.13-1.97). The intervention significantly reduced TI (risk reduction, 31.5%; 95% CI, 16.1%-47.0%). Autonomic arousal responses mediated 29.0% of the effect of the educational intervention on TI.

Conclusions and relevance: In this randomized clinical trial, the TLS intervention decreased TI as measured by pupil dilation, which suggests that individual autonomic arousal is an indicator of how physicians handle uncertainty when making live therapeutic decisions. Pupil response, a biomarker of TI, may eventually be useful in medical education.

Trial registration: ClinicalTrials.gov Identifier: NCT03134794.

Question

How do physicians handle uncertainty when making live therapeutic decisions?

Findings

In this randomized clinical trial of 34 neurologists from Canada, an educational intervention showed a significant 31% reduction in therapeutic inertia compared with the control group. Pupil dilation, a marker of autonomic arousal, mediated the effect of the educational intervention on therapeutic inertia.

Meaning

In this study, the educational intervention helped facilitate optimal treatment choices by decreasing therapeutic inertia in neurologists by reducing autonomic arousal responses; further study in other specialties is warranted.

2015 Feb - 2020 Aug

Foundations of Therapeutic Inertia.

- Making decisions in medical care is a difficult task involving a variety of cognitive processes (Glimcher & Fehr, 2014). Decisions based on erroneous assessments may result in unrealistic patient and family expectations, suboptimal advice, and incorrect treatment. Suboptimal decision making and medical errors are exemplified by the concept of therapeutic inertia (TI).
- How doctors handle uncertainty (e.g. having imperfect information, an unknown treatment response for a particular patient, personal cognitive biases or personality traits) is highly relevant to therapeutic decision-making (Kerr et al., 2008; Levy et al., 2010; Mohan & Phillips, 2011; Reach, 2014; Saposnik, Mamdani, et al., 2019; Saposnik, Sempere, et al., 2017; Saposnik, Sempere, et al., 2016a).
- Given that most therapeutic choices are binary, I used the framework provided by the DPT to explain medical decisions under uncertainty, incorporating physician's cognitive biases, risk preferences, and ambiguity aversion.
- Multiple sclerosis is a paradigm of complex treatment decisions due to the increasingly broad landscape of medications with different efficacy and safety profiles, which makes it an ideal condition in which to evaluate TI.
- The central question of this thesis revolves around how physicians handle uncertainty and how they can avoid making suboptimal decisions. I broke down this problem into five specific inquiries with the following conclusions:
 - o Are cognitive biases common? Our systematic review found that cognitive biases and personality traits affect over 50% of practicing physicians across different specialties and highlighted literature gaps related to the impact of status-quo and aversion to ambiguity on treatment decisions.
 - o What is the prevalence and what are the most common factors associated with TI? How does physician's aversion to ambiguity and low tolerance to uncertainty influence their

treatment choices? I found that TI is a common phenomenon affecting over 60% of physicians who care for patients with different chronic medical conditions, and 60-90% of MS neurologists. TI is evident in nearly one out of four treatment decisions with correspondingly negative consequences for patients and the health care system (Almusalam et al., 2019; Saposnik, Mamdani, et al., 2019; Saposnik, Sempere, et al., 2017). Neurologists' aversion to ambiguity, low tolerance to uncertainty, and expertise are the most common physician-level determinants of TI.

o What can be done to ameliorate the effects of TI? Our innovative TLS educational intervention was designed to take advantage of an existing learned pathway that couples the color red with a learned warning sign, and prevents automatic responses related to the status-quo (no treatment change when warranted by best practice recommendations) (L. Enax, Krapp, et al., 2015; Saposnik, Mamdani, et al., 2019; X. Zhang et al., 2020). In a randomized controlled trial, our TLS educational intervention decreased the likelihood of TI by 70% (Saposnik, Mamdani, et al., 2019). The effects of the TLS were independent of demographic factors, physician's expertise, practice setting, and different perceptions about the current available treatment.

o Physician's favorable ratings of the benefits of MS medications (measured by the global medication score) and level of agreement with the paradigm with treatment escalation were associated with lower TI.

o The TLS educational intervention would facilitate optimal therapeutic responses by decreasing automatic responses attributed to system 1 of the DPT, and increasing the following system 2 pathways: a simulated case-scenario showing evidence of disease progression □ identification of red color of the TLS □ triggers a warning sign ("a change is needed") □ retrieval of the value associated with alternative therapeutic options □ treatment escalation (moving away from continuation with the same treatment as represented by TI).

o What is the relationship between our successful TLS educational intervention, arousal responses, emotional expressions, and TI? I observed that i) critical medical information provided in specific time-periods during the presentation of simulated case-scenarios elicited a phasic arousal response across all participants in the pre-intervention period, ii) the control group had a significant pupil enlargement in the post-intervention period when comparing TLS intervention groups for most critical time periods, iii) despite the limited power of this study, the difference-in-differences analysis revealed a significant 31.5% (95%CI 16.1-47.0) reduction in TI if neurologists were exposed to the educational intervention, and iv) arousal responses regulate the treatment effect of our TLS educational intervention and therapeutic decisions in MS care.

o The role of emotions in decision-making cannot be ignored. When applying a validated machine learning algorithm, disgust and surprise were associated with a lower TI. It is possible that other emotions that were less frequently expressed in our study also play a role in decreasing TI.

- The results of my studies suggest that pupil dilation, a marker of central arousal, is an indicator of how physicians handle uncertainty when making therapeutic decisions. The arousal response also mediates how the TLS-based educational intervention changes physician's treatment decisions under uncertainty, thus decreasing TI.
- In other words, the TLS educational intervention decreases the stress associated with uncertainty related to treatment options, thus increasing goal-directed behavior (i.e. treatment escalation) and decreasing emotional responses (e.g. fear, disgust, contempt) associated with TI.
- An optimal treatment choice is based on the assessment of the benefits and side effects (risks) of a specific medication, with the overarching goal of patients achieving the best possible outcome for patients. The decision to continue with the same medication (i.e. TI) or escalate to a more efficacious treatment is based on computations of medications value commonly influence by ambiguity aversion, physician's expertise, and regulatory aspects of the country of practice.
- The findings of my studies have practical clinical implications in patient care, post-graduate medical education, and health policy. We are now able to identify how physicians manage uncertainty when making treatment decisions. We can estimate the inertia-

reducing benefits of our novel TLS educational intervention and use the autonomic arousal response as a marker of their effectiveness that is unaffected by demand effects or cognitive biases. Consequently, these findings open avenues to tailor educational interventions and formal risk-assessment training to decision makers (medical students, family doctors, and specialists) and conditions. Furthermore, the public, patients and their families may demand a formal training in medical decision-making (e.g. increased awareness of biases, foundations of TI, decision-theory) of future doctors enrolled at medical schools. In the future, this approach may help optimize long-term therapeutic decisions for other and more prevalent chronic diseases (e.g. hypertension, diabetes, high cholesterol) leading to better clinical outcomes by improving medical education.

- As a corollary of my studies, physicians should update their evaluation of treatment options based on new clinical information provided by simulated MS scenarios.
- I hope that these results increase awareness among health care providers, patients and their families, and policymakers to recognize the importance of identifying factors influencing physician's decisions, understanding how they handle uncertainty and implementing strategies to ameliorate TI and avoid medical errors.
- Making decisions in medical care is a difficult task involving a variety of cognitive processes (Glimcher & Fehr, 2014). Decisions based on erroneous assessments may result in unrealistic patient and family expectations, suboptimal advice, and incorrect treatment. Suboptimal decision making and medical errors are exemplified by the concept of therapeutic inertia (TI).
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physician's decisions, understanding how they handle uncertainty and implementing strategies to ameliorate TI and avoid medical errors.

2010 - 2011

iScore Webtool/iScore iPhone version.

The iScore (Ischemic Stroke Risk score) is a recently developed and validated tool to assist clinicians to estimate the risk of death at 30-day, at 1-year (Circulation 2011; 123: 739-49), and

functional outcomes (Stroke 2011 in press) during the initial assessment in the Emergency department or early after hospital admission for patients with an acute ischemic stroke. The iScore

help categorizes patients with an acute ischemic stroke from very low to very high average risk,

using clinical parameters and comorbid conditions, including: age, sex, stroke severity, stroke subtype, smoking status, preadmission dependency, and the presence or absence of atrial fibrillation,

heart failure, previous myocardial infarction, cancer, renal failure, and hyperglycemia on admission.

Following the acceptance of a publication in AHA Stroke Journal, we are updating the web to also

allow the estimation of functional outcomes (death or disability at discharge, death or institutionalization at discharge).

More recently, the iScore showed to predict clinical response to thrombolysis in a large observational study and also validated using data from a randomized clinical trial (NINDS tPA Stroke trial).

The iScore web (www.sorcan.ca/iscore) and iPhone application are objective tools to stratify patients and estimate the risk of a poor functional outcome after an ischemic stroke. It may be used to discuss prognosis, and guide end-of-life care and discharge planning. From the health care perspective, the iScore may be used to help policymakers plan resources, which may result in optimized access to stroke care and rehabilitation services.

2008 Jan 1 - 2009 Jun

Acute Stroke Sheets.

Background: Medical information recorded in charts on stroke patients is heterogeneous.

Relevant information is usually missed.

Rationale: To create a standardized assessment stroke sheet to assist Neurology residents and Staff document relevant information on patients presenting with an acute stroke.

Intervention / Activities: Development of the Acute Stroke Worksheet

Outcomes: To create a screening sheet to standardize the physician's assessment of patients presenting with an acute stroke.

Next Steps: Assessment of Acute Stroke Sheet use.

The acute stroke forms will provide standardized assessment in the management of stroke patients, clinical information and decision making of thrombolytic therapy.

2007 Nov 1 - 2012 Jun

Virtual reality in Stroke Rehabilitation.

As stroke increase with age, with the aging of the population, it is expected an increase in the prevalence of stroke. Consequently, more and more Canadians will face the challenge of managing functional impairments. Rehabilitation services are an increasingly large and important aspect of health care, especially after stroke. The well-documented shortage in rehabilitation providers and resources across the province has challenged the provision of adequate and appropriate rehabilitation services to stroke survivors. Interestingly, virtual reality has emerged as an alternative opportunity for stroke rehabilitation.

We completed a pilot study, a meta-analysis and now are currently funded to determine the effectiveness of virtual reality in stroke rehabilitation.

I am leading EVREST Multicenter (Effectiveness of Virtual reality Exercises in Stroke Rehabilitation), a randomized, controlled study to systematically test virtual reality technology (using Wii gaming system) (<http://www.nintendo.com/wii/what>) as neurorehabilitation therapy

among patients who had experienced a first stroke within 3 months prior to enrolment. If proven to be effective, the use of virtual reality technology using Wii gaming system has a broad range of potential outcomes and benefits. At the patient level, there are opportunities for new exciting mode of stroke rehabilitation that may be undertaken in various clinical and non-clinical settings. The engagement and challenges offered through a gaming interface may foster patient motivation and participation.

At the system level, the identification of relatively low-cost resources those are effective in promoting function recovery after stroke

The results of this study can be transferred to practice across the province as well as nationally and internationally. Moreover, special software can be developed for neurorehabilitation post-stroke. While this study is focused on rehabilitation there may be implications for sectors of the continuum of care, namely stroke prevention and health promotion.

2007 Jul 1 - 2008 Jun

Stroke Box.

Background: Stroke is one of the most prevalent and devastating conditions. Stroke is a neurological emergency that can affect one particular area of the brain. It can be caused by a burst blood vessel (hemorrhagic stroke) or when a vessel is obstructed by a blood clot (ischemic stroke). Ischemic stroke can be treated with (clot busting) thrombolytic drugs, such as alteplase, which is injected directly into a vein. To achieve best outcome, patients need to receive this medication within three hours after onset of stroke symptoms.

Acute ischemic stroke is a treatable condition that requires urgent specialist attention because both thrombolytic drug treatment (t-PA) and specialist care of acute ischemic stroke have been shown to influence survival as well as recovery. For every minute delay in receiving t-PA, the likelihood of good recovery decreases by 1%. A major limitation in the administration of t-PA is time delay. To ensure that patients benefit from thrombolysis within a three hour window requires organization and coordination of all emergency services involved.

Rationale: To implement a quality improvement strategy ("Stroke Box") to facilitate timely access to thrombolysis for improving patients' outcomes.

Theoretical Framework: The "Stroke Box" is a portable, comprehensive source of information and equipment which makes it possible to carry out rapid assessment of an acute stroke victim and initiate thrombolysis therapy, where appropriate, without any loss of time. The treatment window for an acute ischemic stroke patient is less than three hours. Treatment is often delayed as doctors/nurses gather the required information, treatment equipment and medication. (please see appendix in the protocol document). To ensure successful outcomes the thrombolysis procedure must be made as simple as possible. Supports need to be put in place to ensure that staff are organized and trained in the use of t-PA.

The use of the "Stroke Box" which contains elements to increase efficiency (written guidelines, indications, contraindications, dose table, thrombolytic drug, antihypertensive agents, preventative for anaphylaxis drugs, etc.) will reduce set-up time and therefore increase the number of t-PA candidates, ultimately improving patient outcomes.

In summary, this project consists in a quality improvement strategy to optimize the accessibility to thrombolysis for patients with acute stroke.

Target Audience: Health care professionals working in the ED, Residents, Staff, Nurses
Intervention / Activities: Stroke Box.

The implementation of this quality improvement strategy will provide greater efficiency in assessing and preparing patients who are candidates for treatment with t-PA. Reducing preparation time through efficient organization will increase the number of patients that will fit into the 3 hour treatment window. Shortening the length of time before the thrombolytic drug is administered will ultimately improve patients' outcomes.

2. CONTRIBUTIONS TO THE DEVELOPMENT OF PROFESSIONAL PRACTICES

2019 Jan - 2020 Dec

Foundations of Therapeutic Inertia (TI).

The present work is a reflection of my PHD thesis. It begins with the development of the concept of therapeutic inertia in multiple sclerosis (MS) care, and then examines changes in the arousal states to test the mechanism by which the TLS educational intervention decreased TI among neurologists who are making live treatment decisions.

My discussion is centered on empirical results and theory: I synthesized the contributions of my studies within the broader literature and suggest a novel model to explain the association between physician's characteristics and the effects of an educational intervention on TI, and the mediating effects of autonomic arousal states on the educational intervention-TI link. I conclude with practical implications for neuroscience, medical education, and patient care. The present work provides an up-to-date on the frequency of TI, its associated factors, and underlying mechanisms. It also describes the influence of emotional expressions on physicians' therapeutic decisions.

2012 Dec - 2017

Evaluating Clinician judgment in predicting outcome after an acute ischemic stroke. We compared the accuracy of clinicians and a risk score (iScore) to predict observed outcomes following an acute ischemic stroke.

Methods: The JURaSSiC (Clinician JUdgment vs. Risk Score to predict Stroke outComes) study assigned 111 clinicians with expertise in acute stroke care to predict the probability of outcomes of 5 ischemic stroke case scenarios. Cases (n=1,415) were selected as being representative of the 10 most common clinical presentations from a pool of over 12,000 stroke patients admitted to 12 stroke centers. The primary outcome was prediction of death or disability (mRS \geq 3) at discharge within the 95% confidence interval (CI) of observed outcomes. Secondary outcomes included 30-day mortality and death or institutionalization at discharge.

Results: Clinicians made 1661 predictions with overall accuracy of 16.9% for death or disability at discharge, 46.9% for 30-day mortality, and 33.1% for death or institutionalization at discharge. In contrast, 90% of the iScore-based estimates were within the 95% CI of observed outcomes. Nearly half (n=53 of 111; 48%) of participants were unable to accurately predict the probability of the primary outcome in any of the 5 rated cases. Less than 1% (n=1) provided accurate predictions in 4 of the 5 cases and none accurately predicted all 5 case outcomes. In multivariable analyses, the presence of patient characteristics associated with poor outcomes (mRS \geq 3 or death) in previous studies (older age, high NIHSS score and non-lacunar subtype) were associated with more accurate clinician predictions of death at 30-days (OR 2.40, 95%CI 1.57-3.67) and with a trend for more accurate predictions of death or disability at discharge (OR 1.85, 95%CI 0.99-3.46).

Conclusions: Clinicians with expertise in stroke performed poorly compared to a validated tool in predicting the outcomes of patients with an acute ischemic stroke. Use of the risk stroke outcome tool may be superior for decision-making following an acute ischemic stroke. Results from this randomized study informed about elements used by clinicians in predicting stroke outcomes. Moreover, this study will reveal the variability of outcomes estimations given by clinicians compared to the iScore (predictive tool) and real outcomes (n=1440). This study demonstrates the benefits of adding a validated tool to assist clinicians estimate outcome early after hospitalization for an acute ischemic stroke.

3. EXEMPLARY PROFESSIONAL PRACTICE

2021 Mar - present

Perioperative Stroke Assessment.

The present work, currently under development, aims at providing a simple online

Gustavo SAPOSNIK

assessment of individual patients' risk of stroke undergoing cardiac and non-cardiac surgery. It takes into account patients comorbidities, frailty, and standardized perioperative scores validated in stroke outcomes.

This tool will facilitate an evidence-based standardized assessment to determine the risk of stroke among high-risk individuals undergoing a surgical intervention.

4. OTHER

2012 Oct - 2015

Evaluation of STROKE Journal database.

- 1) What is being published?
- 2) English Proficiency, GDP and acceptance
- 3) Factors influencing Editorial decisions and Reviewers' recommendations.